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**UNITED STATES PATENT AND TRADEMARK OFFICE**  
**Board of Patent Appeals and Interferences**  
Case

Inventor : Mitchell R. Swartz  
Group Art Unit: 3641

Serial no. 09/ 750,765

Examiner: Palabrica, R.J.

Filed: 12/28/00

For: **METHOD AND APPARATUS**

**TO CONTROL ISOTOPIC FUEL**

**LOADED WITHIN A MATERIAL**

This is a continuation of Serial no. 07/ 760,970

Filed: 09/17/1991


July 25, 2012

**Board of Patent Appeals and Interferences**  
Alexandria, VA 22313-1450  
To Whom it Does Concern:

**APPELLANT'S**  
**NOTICE OF APPEARANCE *pro se***

Appellant requests to inform the Honorable Board of his appearance *pro se*.

Thank you.  
Respectfully,

  
\_\_\_\_\_  
Mitchell Swartz, Appellant, *pro se*  
Weston, Mass



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**Board of Patent Appeals and Interferences**  
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Box Appeal, Board of Patent Appeals and Interferences  
Box 1450 Alexandria, VA 22313-1450


c/o Ms. Marsha Twitty, Ms. Quita Gould, Legal Specialists, USPTO

Transmitted herewith for filing are the following:

- 1) Appellant's pro se Reply Brief (three copies; one printed; two on CD),
- 2) This Cover letter, and
- 3) A self-addressed stamped postcard for the stamp of the Appeal Box of the the US Patent Office to indicate receipt.

Thank you.

Respectfully,

  
Mitchell Swartz, ScD, MD, EE  
Weston, Mass





**UNITED STATES PATENT AND TRADEMARK OFFICE**  
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**Board of Patent Appeals and Interferences**  
Box Appeal  
Alexandria, VA 22313-1450

***pro se* REPLY BRIEF**

Mitchell R. Swartz, ScD, MD, EE  
Appellant, *pro se*

**UNITED STATES PATENT AND TRADEMARK OFFICE**  
**Board of Patent Appeals and Interferences**  
**Case Number:**

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Group Art Unit: 3641  
 Examiner: Mr. Palabrica, R.J.

July 22, 2012

**REPLY BRIEF**

**Table of Contents**

	Page	#pages	In Case
REAL PARTY IN INTEREST	7		643
RELATED APPEALS AND INTERFERENCES-	7		643
STATUS OF CLAIMS	8		643
STATUS OF AMENDMENTS	8		643
SUMMARY OF INVENTION	9		643
ISSUES	23		643
GROUPING OF CLAIMS	24		643
ARGUMENT - 35 U.S.C. 112 (first paragraph)	25		643

ARGUMENT - 35 U.S.C. 102	109		643
ARGUMENT - 35 U.S.C. 112 (second paragraph)	118		643
ARGUMENT - 35 U.S.C. 101	124		643
ARGUMENT - Other issues	143		643
CONCLUSION AND SUMMARY	165		643
CERTIFICATE OF MAILING	174		643
Appendix "A"	175	3	765
Appendix "B"	178	1	765
0-ExhibitC1.pdf	179	22	765
0-ExhibitC2.pdf	201	2	765
0-ExhibitC3-LANRpub-LENR_DIA.pdf	203	8	765
0-ExhibitC4-Swartz-2006-DTRA-LENR.pdf	211	57	765
0-ExhibitD1-Swartz-CAM.pdf	268	13	765
0-ExhibitD2-Swartz-Quasi-1-Dim Model of LoadingF1.pdf	281	5	765
0-ExhibitD3-Swartz-IsotopFuelLoad.pdf	286	4	765
0-ExhibitD5-Swartz-SurveyJSE2010.pdf	290	18	765
0-ExhibitD6-Swartz-MarwanEtAl-ReToShanahan-2010.pdf	308	6	765
0-ExhibitE0-970-PETU6F1.pdf	314	37	970
0-ExhibitE1-643-removedExhibits.pdf	351	9	643
0-ExhibitE2-937-RemovedDeclarationsPublications.pdf	360	1	937
0-ExhibitE3--AdditionalSubmittedPapersRemoved.pdf	361	11	937
0-ExhibitE4-937-HistogramPAPERS.pdf	372	1	937
0-ExhibitE5-937-PapersSubmitted.pdf	373	9	937
0-ExhibitE6-937-PhotoOFpleadingsFROMpetCERT.pdf	382	1	937
0-ExhibitE7-457-1240-RemovedPublications.pdf	383	1	457
0-ExhibitE8-643-ExhibitB3.pdf	384	1	643
0-RPA0-765-Cover.pdf	385	2	765
0-RPA-00-970-Remand.pdf	387	3	970
0-RPA-01-457-DecisionBoardJuly272001.pdf	390	44	457
0-RPA-02-457-ReqReconsid-457Aug2001.pdf	434	21	457
0-RPA-03-457-1240-ReplyBrief07152002.pdf	455	37	457
0-RPA-04-457-FedAppellCourtSupAppx-1.pdf	492	37	457
0-RPA-05-457-FedAppellCourtSupAppx-2.pdf	529	33	457

0-RPA-06-457-1240-ReqPanelRehearing112002a.pdf	562	25	457
0-RPA-07-457-1240-PetCert02212003.pdf	587	52	457
0-RPA-08-457-1240-RehearingPet09012003.pdf	639	31	457
0-RPA-09-143-DecisionBoard.pdf	670	16	143
0-RPA-10-143-ReqRehearing.pdf	686	102	143
0-RPA-11-937-DecisionBoard1999.pdf	788	28	937
0-RPA-12-937-937-fedAppCourt-ReplyBrief.pdf	816	33	937
0-RPA-13-937-fedAppCourt-PetRehearing07.pdf	849	23	937
0-RPA-14-937-PetCertiorari.pdf	872	56	937
0-RPA-15-970-DecisionBoard.pdf	928	23	970
Affidavit-143-Hagelstein-2007.pdf	951	15	143
Affidavit-258-Hagelstein-2010.pdf	966	15	258
Affidavit-258-Straus-2010.pdf	981	4	258
Affidavit-937-Fox-AmicusBrief-2001.pdf	985	7	937
Affidavit-937-Mallove-AmicusBrief-2000.pdf	992	10	937
Affidavit-937-McKubre-AmicusBrief-2001.pdf	1,002	8	937
Affidavit-937-Rotegard-AmicusBrief-2001.pdf	1,010	6	937
Affidavit-937-Storms-AmicusBrief-2001.pdf	1,016	6	937
Affidavit-937-TalbotChubb-AmicusBrief-2001.pdf	1,022	7	937
Affidavit-937-Valone-AmicusBrief-2001.pdf	1,029	8	937
Affidavit-976-Ahern-2008.pdf	1,037	2	976
Affidavit-976-AhernAff03.pdf	1,039	2	976
Affidavit-976-Bass-1996.pdf	1,041	4	976
Affidavit-976-Beigel-1993.pdf	1,045	4	976
Affidavit-976-Fox-1995.pdf	1,049	3	976
Affidavit-976-Rotegard-1994.pdf	1,052	3	976
Affidavit-976-Shaw-1996.pdf	1,055	2	976
Affidavit-Ahern-Letter-1996.pdf	1,057	1	765
Affidavit-Hagelstein-2007.pdf	1,058	15	765
Affidavit-Josephson-2004.pdf	1,073	1	765
Affidavit-Kurzweil-Letter-1996.pdf	1,074	1	765
Affidavit-Mallove-1994.pdf	1,075	6	765
Affidavit-Mallove-FromtheFront-2003.pdf	1,081	2	765

Affidavit-Mallove2Clinton-2000.pdf	1,083	3	765
Affidavit-Miles-Letter-1996.pdf	1,086	1	765
Affidavit-Miranda-2003.pdf	1,087	2	765
Affidavit-NRLonSwartz-2006.pdf	1,089	1	765
Affidavit-Straus-1992.pdf	1,090	5	765
LANRpub-2007CFColloq@MIT.pdf	1,095	8	765
LANRpub-2009CFColloq@MIT.pdf	1,103	3	765
LANRpub-2010CFColloq@MIT.pdf	1,106	14	765
LANRpub-2011CFColloq@MIT.pdf	1,120	4	765
LANRpub-LENR_DIA.pdf	1,124	8	765
PTOfcCOVERUP-Excerpt-Decision-JudgeMoorevsPTO2005.pdf	1,132	11	765
PTOfcCOVERUP-ExcerptTranscript-ValonevsPTO-2004.pdf	1,143	18	765
PTOfcCOVERUP-Memorandum 1989.pdf	1,161	1	765
PTOfcCOVERUP-SAWmemorandum-2006.pdf	1,162	4	765
Swartz-3RH-IE-f2.pdf	1,166	13	765
Swartz-Anode Plate-2009-ACS-M0.pdf	1,179	4	765
Swartz-ANS-001.PDF	1,183	7	765
Swartz-BremsstrahlungF1.pdf	1,190	12	765
Swartz-Codeposition.pdf	1,202	5	765
Swartz-ConsistencyBiphasic.pdf	1,207	12	765
Swartz-Dances.pdf	1,219	7	765
Swartz-DualOhmicControl11-030.pdf	1,226	2	765
Swartz-EsophagFistula.pdf	1,228	3	765
Swartz-LessonsPFC.pdf	1,231	15	765
Swartz-MarwanEtAl-ReToShanahan-2010.pdf	1,246	6	765
Swartz-MetamaterialShaped2010.pdf	1,252	8	765
Swartz-PatSUCC600.pdf	1,260	4	765
Swartz-Patterns_of_FailureF1.pdf	1,264	6	765
Swartz-PdD2O.pdf	1,270	30	765
Swartz-Photoirradiation.pdf	1,300	12	765
Swartz-PhusonsF1.pdf	1,312	10	765
Swartz-PossibleDeut.pdf	1,322	12	765
Swartz-ProcICCF14-3RH.pdf	1,334	14	765

Swartz-ProciCCF14-AnalysisSuperwave.pdf	1,348	9	765
Swartz-ProciCCF14-ElectricalBreakeven.pdf	1,357	7	765
Swartz-ProciCCF14-ExcessPowerGain.pdf	1,364	24	765
Swartz-ProciCCF14-NearIR.pdf	1,388	19	765
Swartz-ProciCCF14-Phusor.pdf	1,407	19	765
Swartz-ProciCCF14Bass-ESID.pdf	1,426	6	765
Swartz-SurveyJSE2010.pdf	1,432	18	765
Swartz-Verner,Frank-ImpactD2OonNickel.pdf	1,450	8	765

(\*\*\*) - These Exhibits have each been in several of Appellant's (then Applicant's) file folders including Appeal No. 98-2593, SN 08-406,457; Appeal No. 97-3208, SN 07-339,976; Appeal No. 94-2921, SN 07-371,937; Appeal No. 94-2920, 07-760,970; Appeal No. 2009-1853, SN 10/646,143; Appeal No. 2003-number not known, SN 09-748,695, and other cases where the *pro se* Appeal Briefs have been withheld by the Examiner *en bloc* to, among other things, obstruct justice and continue the systematic removal of Evidence by the Examiner in his perpetual obstruction of efficient, clean, energy production, as partially described factually herein.

### **(1) Real party in interest**

The party named in the caption of the brief is the real party in interest:

Mitchell R. Swartz, ScD, MD, EE, Appellant, *pro se*

### **(2) Related appeals and interferences**

The *pro se* Appellant's other cases, presently and previously, before the Board will directly affect and be directly affected by or have a bearing on the Board's decision in the pending appeal, including the following:

Appeal No. regarding the specification and claims of application serial number 12/316,643

Appeal No. regarding the specification and claims of application serial number 12/932,058

Appeal No. 2009-1853 regarding the specification and claims of application serial number 10/646,143

Appeal No. 98-2593 regarding the specification and claims of application serial number 08-406,457

Appeal No. 97-3208 regarding the specification and claims of application serial number 07-339,976

Appeal No. 94-2921 regarding the specification and claims of application serial number 07-371,937

Appeal No. 94-2920 regarding the specification and claims of application serial number 07-760,970

Appeal No. 94-2919 regarding the specification and claims of application serial number 07-760,970

Appeal No. 94-2918 regarding the specification and claims of application serial number 07-760,970

Appeal No. 94-2917 regarding the specification and claims of application serial number 07-760,970

Appeal No. 97-3208 regarding the specification and claims of application serial number 07-339,976

Appeal No. 98-2593 regarding the specification and claims of application serial number 08-406,457

Appeal No. 2009-1853 regarding the specification and claims of application serial number 10/646,143

### (3) Status of claims

Claims 1-10, 12-19, 21, and 22 remain in this application

Claims 1-10, 12-19, 21, and 22 (all claims) stand rejected pursuant to 35 U.S.C. 112, first paragraph.

Claims 1-10, 12-19, 21, and 22 stand rejected pursuant to 35 U.S.C. 112, second paragraph.

Claims 1-10, 12-19, 21 and 22 stand rejected pursuant to 35 U.S.C. 102(b).

Claims 1-10, 12-19, 21, and 22 stand rejected pursuant to 35 U.S.C. 101.

The appealed Claims are separately patentable, materially distinct, not unduly multiplied, and have separate limitations as recited in the claims. They do not stand or fall together. The appealed dependent claims are also separately patentable because they are materially distinct, not unduly multiplied, and have separate limitations as recited in the claims. They do not stand or fall together.

The reasons include those discussed in each Arguments section.

Claims 1-10, 12-19, 21 and 22 stand rejected pursuant to 35 U.S.C. 102(b).

Claims 1-10, 12-19, 21 and 22 stand rejected pursuant to 35 U.S.C. 101.

### (4) Status of amendments

The Office's Advisory allowed entry of amended Claim 5.

The amended dependent claims are also separately patentable because they are materially distinct, not unduly multiplied, and have separate limitations as recited in the claims. They do not stand or fall together.

The reasons include those discussed in each Arguments section.

### (5) Status of amendments

The Office's Advisory allowed entry of amended Claim 5.



## (5) Summary of invention

**Fact 1 - '765 is a two-stage method which involves a first stage of electrode loading, and then, a second stage of sudden rapid ("catastrophic") flow of hydrogen within the metal**

The following is a concise description of the present invention and is made without demeaning or limiting the other features of the above-entitled invention. The invention at issue in this case, generally speaking, is a two-stage method which involves a first stage of electrode loading, and then, a second stage of sudden rapid ("catastrophic") flow of hydrogen within the metal. ... The apparatus includes means to extract products. The apparatus includes intraelectrode barriers to obstruct the movement of the isotopic fuel. The apparatus includes thermal and electrical busses, and enables integration of smaller units into larger assemblies.

On Page 4, the original specification (lines 9-10) continues to teach the utility of the subject matter,

**"Controlled reactions in loaded metals offer the possibility of more efficient and inexpensive energy."**

Page 6 of the original specification (lines 1-19) teaches the scope of the subject matter, defined by the rejected claims.

**"The foregoing objects are achieved in a system which includes in combination: a novel two-stage loading device, containing in combination:**

- a cathode able to be charged from a novel anode with deuterons at a high efficiency,**
- a deuteron impermeable barrier to increase the rate of desired reactions,**
- a thermal pipe to remove heat,**
- a modified solution consisting of a gel containing lithium deuterioxide and palladium deuterioxide,**
- a structural barrier to minimize catastrophic loss of said cathode,**
- a composite character of said cathode to minimize catastrophic loss of said cathode,**
- a structural barrier external to said cathode to minimize catastrophic loss of said cathode, and**
- an external casing to provide uniformity and plug-in-ability of said device into a superassembly which allows integration of the smaller energy producing devices."**

Page 10 of the original specification (lines 3-20) teaches the details within the loaded sample, and what is the arrangement to produce that loaded sample.

"Figure 1 symbolically shows the compartments used to analyze an electrochemical reactor. Figure 1 gives organization to the different parts of a simple reactor referred to in this disclosure. It is not meant to be physically realistic with respect to size. The cathode is dissected into four regions. Three compartments are shown within the metal itself. The flow of deuterons is shown by arrows. The label 1 represents the metallic cathode, usually palladium in the preferred configuration. The labels 2 and 3 represents compartments 2, and 3 respectively, which are discussed in detail below. The label 7 represents the anode which in the preferred embodiment is composed of palladium. The label 6 represents the solution consisting in the preferred embodiment of a gel containing antidesiccant, in combination with LiOD, palladium salts, and heavy water (D2O)."

On Page 10 of the original specification (lines 22-27 and continuing to page 11, lines 1-8), it is shown how to load.

"The application of said power source creates an applied electric field intensity which produces cation flow towards the cathode. There results in the near cathode solution (labeled as 5 in figure 1) a buildup of deuterons, and a low dielectric constant (gas bubble) layer. The bubbles are labeled as number 10 in figure 1. There may be spikes or on the cathode (labeled as 11 in figure 1)."

"Classically, an electrode in a deuteron solution at equilibrium should measure potentials associated with the Nernst equation. However, during the reaction, the system is not at equilibrium. Thermodynamics assumes equilibrium but tells nothing of the rate. Therefore, a quasi-1-dimensional model can be used to describe the situation external to the cathode. In the absence of solution convection, molecular flux (F) results from both concentration gradients and electrophoretic drift."

Page 11 of the original specification (lines 13-29) teaches how the loading depends upon the solution.

"Coupled equations thus determine the distribution of deuteron species in the bulk solution.  $K_f$  is the bulk rate of the desired reactions.  $K_c$  is the rate at which deuterons physically enter the palladium cathode.  $B$  is the diffusivity."

"For simplicity, a number of approximations are made, such as no free charge density. In addition, deuteron penetration occurs at the cathode, and is electron limited, at an efficiency of  $E_c$ , so that the following steady state expression for the initial coefficient of the final spatial distribution of deuterons is:"

"The following quasi-1-dimensional model can be used to describe the situation external to the cathode. In the absence of solution convection, molecular flux (F) results from both concentration gradients and electrophoretic drift."

Page 11 of the original specification (lines 30-35) teaches how the loading depends upon the solution.

"Coupled equations thus determine the distribution of deuteron species in the bulk solution.  $K_f$  is the bulk rate of the desired reactions.  $K_c$  is the rate at which deuterons physically enter the palladium cathode.  $B$  is the diffusivity."

On Page 12 of the original specification (lines 1-9) teaches the subject matter involving different compartments within an electrode.

**"Figure 2 a simplified two-dimensional diagram which schematically shows the cathodic compartments used to describe a CAM electrochemical reactor. The cathode is dissected into several regions. The label 1 again represents the crystalline metal cathode. In figure 2, the label 2 points out the entrapped volumes within compartment 1 (label 1). Three of the compartments are open to the ambient and two are labelled by number 3; they represent compartment 3. Most current theories involve the crystalline metal (label 1)."**

On Page 13 of the original specification (lines 1-21), continues with the teaching of the role of vacancies and movements of deuterons after loading,

**"The catastrophic active medium (CAM) theory differs from the other theories in that the desired reactions are hypothesized to not occur within the metal bulk, but at certain large vacancies and defects by the sudden fractional desaturation of deuterons. ... Figure 2 schematically shows a piece of such highly loaded metal. ... One cathodic compartment consists of the crystalline (e.g., beta phase) palladium into which deuterons can diffuse and remain in well-defined shallow energy traps. The second and third compartments of the cathode consist of the defects, grain boundary dislocations, and larger defects merging into bubbles and fissures. ... It is the movement of deuterons to compartment 2 which begins the process at that location."**

On Page 13 of the original specification (lines 21-31), the text teaches the best mode contemplated by the inventor of carrying out his invention [underlined for emphasis],

**"Catastrophic deuteron flux, coupled with a exothermic deuteron desaturation of the active medium, drives the fusion reactions. This occurs until, by a second catastrophic process, the fusion-defect-site is no longer confined. The final reactions in the CAM theory ends with the opening up of the defect or fissure through a large crack (compartment 3). By this theory the fissures are the result of the catastrophic desaturation of the active medium that was previously fully deuterated (e.g. in the preferred embodiment palladium or titanium)."**

On Page 14 of the original specification (lines 9-16), teachings involving the materials to be loaded are given which enable any person skilled in the art to make and use the subject matter defined by each of the rejected claims,

**"In most metals (e.g. aluminum, cobalt, copper, iron, nickel, platinum, silver, and tin) the deuterium solubility is described by the experimental relation [where  $K$  is the Sievert constant, and  $p$  is the partial pressure of deuterium gas (0)]. However, all such metals have low solubility, and only dilute solutions are**

stable (about one deuterons per 10,000 or more metal atoms). Furthermore, in such metals deuteron solubility is endothermic. Therefore, the solubility for these metals increases with temperature."

On Page 14 of the original specification (lines 18-28), the teaching is given of the best mode contemplated by the inventor of carrying out his invention [underlined for emphasis],

**"In contrast within palladium and titanium (and other Group IVb and Vb metals and some rare earths such as cerium, lanthanum, niobium, tantalum, thorium, vanadium, zirconium) much different behavior occurs. First, much more concentrated solutions can exist. For these metals the greater deuteron concentrations mean that they act like emphores ('vases', similar to the biomaterial myoglobin). Furthermore, the deuteron binding in these metals is exothermic. This indicates that the deuterons reside in shallow energy traps located within and throughout the lattice. Most importantly for the CAM theory, the deuteron binding capacities decrease with temperature for these metals."**

On Page 15 of the original specification (lines 1-12), teachings enable any person skilled in the art to calculate the important ratio of the subject matter defined by each of the rejected claims

**"The deuteron-laden metal lattices change significantly with increasing deuteron loading. An extensive literature, involving solubility isotherms and x-ray results demonstrates two solid solutions of protons in palladium. During the time of deuteron loading there is progressive increase in the volume of the cathode. A 5000 atmosphere internal pressure is consistent with the 4% plastic deformation following deuterium loading."**

**"Classically, the atomic ratio of deuterons to palladium is used to describe the quantity of deuterons in metal."**  
**(Pd D<sub>x</sub>), where "**

On Page 16, the original specification (lines 1-5) teaches the subject matter of loading by deriving the fractional saturation (yD).

**"The quantity of the latter depends both upon the amount of deuteron binding material present [e.g. palladium in its beta phase], the number of intralattice sites available for the deuterons (n) and the affinity of the palladium lattice for those deuterons. The affinity is thus modeled as a fractional saturation (yD)."**

On Page 17, the original specification (lines 1-10) continues with the teaching of fractional saturation changes displacing deuterons.

**"Figure 3 shows the hydrogen-solubility (hereinafter called saturation or binding) for palladium as a function of temperature, along with Taylor series expansions at two temperatures. The curve shows the quantity in cubic centimeters (STP) contained in 100 grams of palladium. The total quantity of**

hydrogen in palladium is markedly temperature dependent. The Taylor series expansion shows that the differential desaturation with temperature increases with decreasing temperature. The sharp decrease in total quantity bound for an increase in temperature may drive the desired reactions by catastrophically displacing deuterons into compartment 2."

On Page 17 of the original specification (lines 20-28) teachings enable any person skilled in the art to make and use the subject matter defined by each of the rejected claims:

"The CAM theory considers palladium as an "active" medium because unlike most other metals, palladium has a deuteron capacity which falls rapidly as the temperature rises. The temperature effect upon deuteron desaturation, in palladium, usually begins in the beta phase. The binding decreases so markedly with temperature that there is almost a decade decrease from just 0 to 50 Centigrade. At 110 C, the beta phase converts to the alpha phase with an additional 0.3 moles of O<sub>2</sub> gas released."

On Page 19 of the original specification (lines 1-18); teaches the best mode contemplated by the inventor of carrying out his invention:

"Figure 4 shows that as current is delivered to the cathode there is a steady increase in deuterium within the cathode. Initially, because of the large capacity for deuteron binding in compartment 1, the deuteron pressure rises only slightly. ... It can be seen that there occurs a critical catastrophic event wherein the fractional saturation suddenly falls as the temperature rises in concert. As the active medium (palladium) catastrophically releases deuterons to the defect sites astronomic pressures develop. In a crescendo fashion, the desired reactions result and the cathodic temperature rises even further. The temperature in compartment 2 rises further, but is limited as phonons carry off the excess energy of the reactions. The active medium around the defect site, in which the desired reactions occur, reabsorbs phonons resulting in the observed excess heat."

On Page 19 of the original specification (lines 20-28) continues with the teaching of increasing the likelihood of the desired reactions by the catastrophic fractional desaturation of deuterons.

"The catastrophe occurs precisely because the further temperature increase causes even more flux of deuterons into compartment 2, further increasing the likelihood of the desired reactions. The reaction is driven by the catastrophic fractional desaturation of deuterons from the crystalline palladium lattice, previously filled to capacity. The catastrophic mass transfer of deuterons to the defects (from the saturated metal, not the solution) enables the desired reactions to occur. Also the electrical charging of the cathode to a high negative voltage should enhance the reaction." and is limited as phonons carry off the excess energy of the reaction. The active medium around the defect site, in which the desired reactions occur, reabsorbs phonons resulting in the observed excess heat."

On Page 20 of the original specification (lines 20-28) continues with the teaching of increasing the likelihood of the desired reactions by the catastrophic fractional

On Page 19, the original specification (lines 30 and continuing to page 20, line 5) teaches the correlation to deuterium (or hydrogen) embrittlement.

**"The reactions of deuterium continue until the crystalline palladium (the active medium because of its high fractional saturation and its exothermic desaturation tendency) is spent of its deuterons or until, by a second catastrophic process, the fusion-defect-site is no longer confined. At that point, catastrophic exposure of compartment 2 to the ambient occurs creating compartment 3. The intracathodic compartment 3 of the CAM theory is known from endstage deuterium (or hydrogen) embrittlement."**

On Page 21, the original specification (lines 1-16) teaches the best mode contemplated by the inventor of carrying out his invention, including anode shape, solute in the heavy water solution, and the arrangement of the electrical power source.

**"Turning now to Figure 5 shows a typical experimental setup, but with a novel cruciform-shaped sacrificial anode of palladium in a solution (labeled 7). The preferred solution (6) contains palladium salts, lithium deuterioxide, and heavy water. The cruciform shape is the preferred shape of the anode in that as it is sacrificed to the solution (enabling efficient codeposition of palladium and deuterons) the surface area most nearly remains constant during its decomposition of said sacrificial anode. The connections to the electrodes are labeled as 81 and 82. The reaction vessel is labeled 8. The cathode is labeled as number 1. ... However, the deuterated metals could also be filled by codeposition of deuterium and palladium, or by high pressure deuterium gas."**

On Page 21 of the original specification (lines 18-19), the present invention is shown to be useful, because it removes heat and assembles smaller devices.

**"In the following devices, heat pipes are included as well as a superassembly capable of removing excess heat. "**

Page 21 of the original specification (lines 21-24) teaches the material required for loading.

**"In the following devices, palladium is the described preferred embodiment for the cathodes, but members of the group consisting of vanadium tantalum, niobium, lanthanum and cerium may also be used."**

On Page 22 of the original specification (lines 1-17) teaches the best mode contemplated by the inventor of carrying out his invention to minimize electrode damage.

**"Furthermore, one improvement is that the cathode should be improved for deuterium solubility, while being stabilized from catastrophic deformation which would end the desired reactions. There are a number of methods by which this is accomplished."**

**"Within the metal (labeled 1), there are several methods used in this device to minimizing catastrophic fracture. First, is the preferred use of cathodic binary alloys. Some palladium alloys (e.g. boron, silver or gold) exhibit, for intermediate compositions, peak levels of hydrogen (and deuterium) solubility."**

**"Second, in the preferred embodiment, manganese could be added to the palladium to decrease the susceptibility to deuterium cracking. Third, in the preferred embodiment, said cathode is stabilized by an external barrier construction. Fourth in the preferred embodiment additional diffusion barriers are placed to obstruct the released deuterons."**

On Page 22 of the original specification (lines 19-27) teachings enable any person skilled in the art to make and use the subject matter defined by each of the invention with regard to minimizing electrode deformation.

**"In the preferred embodiment internal materials are added to decrease the likelihood of electrode deformation. For example a composite material could be fashioned using palladium and epoxy so that the electrode is more like bubblegum than like crystalline metal. Although the inter- and intramolecular forces are less, the bond energies increase because the important parameter is the product of force times distance. The weaker interactions, acting over longer distances, would lead to increased energies required to rupture the electrode."**

Page 23 of the original specification (lines 1-7) enables any person skilled in the art to make and use the composite material taught in the application.

**"In the preferred embodiment tungsten microspheres are added to the metal. The very large melting temperature of the tungsten prevents it from melting and alloying with the palladium when the desired reactions are achieved. The purpose of the spherical shape of the microspheres is to stop the propagation of defects by giving a large radius of curvature which thus decreases the likelihood of said defects proceeding."**

On Page 23 of the original specification (lines 22-28), the barriers to prevent expansion are taught.

**"After turning to figure 6, attention is drawn to the barrier labeled 40 which surrounds one sphere of compartment 2 (which is not labeled). It is made of a material characterized by a high modulus of elasticity so as to retard any expansion of compartment 2. The purpose of the expansion barrier is to prevent expansion of the cathode (labeled 1) and thereby minimize formation, and propagation of compartments 3."**

Page 24 of the original specification (lines 1-18) teaches the best mode contemplated by the inventor of carrying out his invention, including the arrangement of electrodes, the direction of the applied electric field, and the locations of the barriers and other features.

**"Figure 7 is an isometric drawing of a CAM electrochemical device, and shows the direction of the electric field. Figure 7 shows a see-through view over the cathodic volume. This cutaway exposes the four concentric components of the device at that location. In this simplified CAM device, surrounding the cathode, in coaxial fashion, are a deuteron diffusion barrier (labeled 50) and an expansion barrier (labeled 40). These barriers are discussed in detail below. In this particular device, the cathode is axially-fed the deuterons. ... The electric field points from anode (labeled as 7) to the cathode (labeled as 1). In the device shown in figure 3, label 20 represents the structural casing wall which makes this CAM device "dry". The enclosed solution, in the preferred embodiment actually consisting of a heavy water-LiOD-gel, and is labeled number 6. The device is shaped like a fuse and can be easily placed into, or removed from, an assembly and system used to both power the reaction and extract the excess heat."**

On Page 24 of the original specification (lines 22-32, and continuing to page 25, lines 1 through 6), Figure 8 and the text teach for those skilled in the art the organization of the components of the present invention.

**"Figure 8 shows a vertical cross-sectional slice of a CAM device, having a external structural casing support system, a centrally placed axially-filled cathode, a coaxial deuteron-barrier and coaxial expansion-barrier. The structural support system (labeled 20) encloses an axially-filled cathode for loading reactions consisting of a coaxial deuteron-barrier and coaxial expansion-barrier. The expansion barrier (labeled 40) surrounds the cathode and prevents expansion. Between the two is a deuteron impermeable barrier (labeled 50) which prevents outward diffusion of deuterons when the cathode is catastrophically desaturated of its deuterons. The barrier prevents loss of deuterons to the expansion barrier, and acts as a circumferential locus of fusion. The cathode is labeled as 1. In this CAM device, the cathode is charged in a direction perpendicular to the drawing (e.g. similar to figure 7)."**

Page 25 of the original specification (lines 8-12), teaches the best mode contemplated by the inventor of carrying out his invention with respect to the thermomechanical material, such as a thermally-conductive epoxy.

**"Figure 9 is a cluster of seven CAM devices held together by an external structural casing support system, and an intercluster thermomechanical material. A high thermally conductive epoxy would be the preferred**



**embodiment. This would enable facile, relatively inexpensive, support and thermal coupling for the system."**

Page 25 of the original specification (lines 14-22) teaches the any person what the organization of the electrodes, barriers, and deuteron flow is as the "catastrophic desaturation" creates the internal flux after loading.

**"The cathodes are fashioned as cylindrical palladium surrounded by a deuteron impermeable (or relatively impermeable) barrier (e.g. tungsten or gold). The result would be that after a slow charge with deuterons, the catastrophic desaturation yields a rapid symmetric flux through the walls of the cathode cylinders - directly into the impermeable wall thereby increasing fusion."**

On Page 25, with reference to Figure 10, of the original specification (lines 24-30, and continuing to page 26, lines 1 through 8) teaches the best mode contemplated by the inventor of carrying out his invention using a central axially-filled cathode, two coaxial deuteron-barriers and an inner thermal pipe. Included are the compositions of the materials to be used.

**"Figure 10 shows a vertical cross-sectional slice of a CAM device, with a central axially-filled cathode, two coaxial deuteron-barriers and an inner thermal pipe. This device is surrounded by a structural support system labeled 20. The axially-filled cathode (labeled 1) is constructed within and around novel devices. Coaxial with the cathode are two sites consisting of double coaxial deuteron-barriers and an inner thermal pipe."**

**"The inner thermal barrier is labeled 70. In the preferred embodiment this would be gold. Within that barrier is the thermal pipe (labeled 70). In the preferred embodiment, the pipe could consist of a thermocouple, or be connected to a thermocouple by a diamond filament or thermally conductive composite material. The outer deuteron barrier is labeled 50. The barrier to expansion is labeled 20. For this device the inner four layers (from inner to outer) are diamond filament, gold, palladium, and gold."**

On Page 26 of the original specification (lines 10-31, and continuing to page 27, lines 1-2), , with reference to Figure 11, the inventor teaches the subject matter in a different embodiment, and again includes the materials involved, as well as the configuration.

**"Figure 11 shows a vertical cross-sectional slice through a novel CAM coaxial device with a coaxially-filled cathode, and an inner coaxial deuteron-barrier and thermal pipe. This embodiment is in a cylindrical configuration. The electric fields are in the radial direction. This device is characterized by coaxial loading of the cathode with deuterons (labeled 1). In the figure, the anode is circumferential to the cathode, and is labeled as 7. The solution (labeled 6) consists of lithium deuterioxide, palladium deuterioxide, and heavy water as the preferred embodiment. The inner diffusion barrier (labeled 60,**

and consisting of gold in the preferred embodiment) and the inner thermal pipe (labeled 70, and consisting of a diamond filament in the preferred embodiment) are shown in cross-section. ... The heat energy is extracted from the center. In this CAM device, the activation current is supplied between 1 and 7. The barrier (70) acts to provide a geometric focus at which the desired reactions occur. The is extracted through thermal pipe (70) which in the preferred embodiment is diamond, or composites of diamond (e.g. thermally conductive epoxy filled with diamonds)."

Page 27 of the original specification (lines 4-11) teaches the best mode contemplated by the inventor of carrying out his invention with respect to device assembly.

"Figure 12 shows three CAM devices (labeled as 90 in figure 12; but similar to what is shown in figure 3). These devices each contain a cathode (labeled 1), intradevice gel containing lithium and palladium deuterioxide (labeled 6), and anode (labeled 7). These CAM devices are inserted, similar to a fuse onto a holding board (labeled 91), held in place by clips (labeled 92). Some of the clips are electrically conductive (e.g. to hold the anode) whereas other clips are insulators."

On Page 27 of the original specification (lines 13-18) is taught how the devices are inserted.

"After being mounted to the board, the three CAM devices are inserted into the device receptor apparatus (labeled 93 in figure 12). Said apparatus has electrical and thermal connectors (labeled 96, and 97 respectively) which are held in a mechanical connecting system (labeled 94). The entire apparatus has heat dissipative radiator (labeled 95)."

On Page 27 of the original specification (lines 20-25), the present invention is shown to be useful, because each "unit is thus easily exchangeable by replacement with a functioning one".

"The purpose of the device receptor apparatus is to integrate the three (or more) CAM units. The three cathodic connectors are connected to the control apparatus. However, the thermal connections (labeled 97) are used to couple said units together. The damage or rundown of one CAM unit is thus easily exchangeable by replacement with a functioning one."

Page 27 of the original specification (lines 27-32, and continuing to page 28, lines 1 through 10) teaches the best mode contemplated by the inventor of carrying out his invention using orthogonal electrical fields. The specification includes discussions of the casings, applied electric fields, and barriers.

**"Figure 13 is a crosssectional drawing of a lamellar CAM reactor. This device has two orthogonal applied electric fields. The first (labeled E-field number 1 in the figure) is that which is applied to charge the palladium with deuterons. The second applied electric field intensity is delivered after full charging has been achieved. In the figure the anode and cathode are labeled as 7 and 1. The electrolyte solution or gel is labeled as 6. The connections for the first electric field are labeled as 81 and 82. The connections for the second electric field are labeled as 85 and 86. The mechanical casing is labeled 20. The deuteron impermeable barrier is comb-shaped in this preferred configuration, and is labeled 55 in figure 13. The cathode in this preferred configuration is divided into parallel slabs. Between these slabs alternate deuteron-impermeable barriers. Application of the second electric field causes the deuterons already loaded in the cathode to redistribute, but the deuteron-impermeable barrier(s) act to enhance the desired reactions."**

Page 28 of the original specification (lines 16-32, and continuing to page 29, lines 1 through 3) teaches the best mode contemplated by the inventor of carrying out his invention using the combination of orthogonal electric fields and device assemblies, with the applicant list connections and materials.

**"Turning to figure 14 which shows three lamellar CAM reactors. Each device is equipped with orthogonal applied electric fields. The second applied electric field intensity is delivered after full charging."**

**"Each reactor is labeled as 90 in figure 14, but similar to what is shown in figure 13. These devices each contain a cathodes (labeled 1), intradevice gel containing lithium and palladium deuterioxide (labeled 6), and anode (labeled 7). These CAM devices are inserted, similar to a fuse onto a holding board (not shown), held in place by clips (labeled 102). The three CAM device are shown connected to a microprocessor control system (labeled 110). Said apparatus has an electrical bus to connect the anodes (labeled 105) which are connected to the anodic connectors (labeled 82). Said apparatus has an electrical bus to connect the cathodes (labeled 106 and 107) which are connected to the cathodic connectors (not labeled in the figure). The cathodic system buses (106 and 107) are electrically shorted together during the deuterium charging."**

**"Said apparatus has a thermal bus (labeled 107) connected to the heat pipes (labeled 70) which are held in a mechanical connecting system (labeled 20)."**

On Page 29 of the original specification (lines 6-16), teaches the connections and setup so that any person can make and use the subject matter defined by each of the rejected claims.

**"The purpose of the receptor apparatus is first to integrate the three (or more) CAM units. The three cathodic connectors are connected to the control apparatus. However, after loading the cathodes, the cathodic buses (106 and 107) are separated and a second electric potential is supplied between these two buses. The result is the second applied electric field which is shown in figure 13, but not in figure 14. The result is the piling up of deuterium at the deuteron-impermeable barriers (labeled 55 in figure 14). The energy is directed out via the heat pipes (70) and the thermal bus (107). The damage or rundown of one CAM unit is thus easily exchanged by replacement with a functional one."**

Page 29 of the original specification (lines 18-27) teaches the stereoconstellation of the invention, its composition, and barriers.

**"Figure 15 is a crosssectional drawing of a device used to activate a CAM reactor. The cathode is labeled 1. The solution or gel is labeled as 6. The mechanical casing is labeled 20. The deuteron impermeable barrier is labeled 55. ... The CAM device shown in figure 15 does not show, for simplicity, the thermal transfer equipment. External structures labeled 110 and 120 are near circumferential in location to the casing (20), and are used to squeeze the CAM reactor. The resultant pressure causes catastrophic desaturation."**

On Page 30 of the original specification (lines 1-14) there are teachings which enable any person skilled in the art to make and use the subject matter defined by each of the rejected claims, including electrodes, heat pipes, subassemblies, electrical busses, barriers and clips.

**"Turning to figure 16, shown are three pressure-activated CAM reactors. Each reactor (un-labelled) is similar to that shown in figure 13. These devices each contain a cathode (labeled 1), heat pipes (labeled 70), expansion barrier (40), deuteron diffusion barrier (labeled 50), external casing (20), and thermomechanical connector (labeled 130) for assembling the heat pipes (70) to the external thermal bus (140). ... The CAM devices are inserted, similar to a fuse onto a holding board (150, 151 above and below the assembly), held in place by clips... External structures labeled 110 and 120 are near-circumferential in location to the casing (20), and are used to squeeze the CAM reactor."**

Page 30 of the original specification (lines 16-20) teaches the subject matter of assemblies, quite useful to those skilled in the art and consumers, as well.

**"The resultant pressure causes catastrophic desaturation. The purpose of the receptor apparatus is to integrate the three (or more) CAM units, and to couple said devices to the control system. As before, damage or rundown of one CAM unit allows easy replacement by a functioning one."**

On Page 30 of the original specification (lines 22-32), there is teaching, quite useful to those skilled in the art, because it teaches the best mode contemplated by the inventor of carrying out his invention.

**"Figure 17 is another configuration of device which can be easily integrated into power and heat systems. It consists of a reactor as described above (cf. figure 13) which is arranged as a thick film device, located in a transistor-like header. The header (labeled as 200) is perforated by six (6) holes (not labeled) to accommodate insulators (labeled 210), through which six leads enter said header. The leads consist of electric leads (182, 185, 181, and 186), and two thermal connections (labeled 170 in figure 17). The electrical leads are connected to the thick film device. The anode (labeled 7) is connected to the anodic terminal (82) to which is bonded the "anodic" lead (labeled 182)."**

Page 31 of the original specification (lines 1-8) teaches any person skilled in the art to make and use the subject matter defined by each of the rejected claims, including use of semisolid gels and use of barriers to obstruct the driven deuterons.

**"The cathode (unlabelled but located adjacent to its cathodic terminal labeled 81) is connected via the cathodic terminal (81) to the "cathodic" lead (181). The electrolyte is an electrolyte gel as discussed above (labeled 6). After loading the leads 185 and 186 are activated to drive the deuterons into the obstructing barriers (which alternate with the cathode)."**

On Page 31 of the original specification (lines 10-18), teaches the best mode contemplated by the inventor of carrying out his invention with respect to extraction of generated product using an applied inhomogeneous magnetic field intensity.

**"Figure 18 shows a CAM reactor with a modification to extract an isotopic nuclear fusion product (e.g. tritium) from said reactor rather than heat. The device shown in the figure has an axially loaded cathode (labeled 1). The anode is labeled 7, and the solution 6. The structural casing is labeled 20. The cathode and anode have electrical connections labeled 81, and 82, respectively."**

**"The electrical connections to the FUSOR power supply are labeled 181 and 182. An expansion barrier (40) is shown."**

Page 31 of the original specification (lines 20-24) teaches the best mode contemplated by the inventor of carrying out his invention by using an inhomogeneous magnetic field intensity:

**"An inhomogeneous magnetic field intensity is applied by coil labeled 300 to one portion of the cathode (1). Said magnetic field is driven by the power supply (labeled 301) in the figure. The spatially inhomogeneous magnetic field could also be created by a superconductor."**

Page 31 of the original specification (lines 26-32, and continuing to page 32, lines 1 through 6) teaches loading, and the role of differential magnetic susceptibility.

**"The cathode is loaded by the electrochemical drive system. The differential magnetic susceptibility between isotopic fuel and the nuclear fusion product is used to magnetically pump the product to and through the barrier labeled 350. At that location there is a buildup of the isotope with the larger magnetic susceptibility due to said differential magnetic susceptibility. The magnetic force resulting from the applied magnetic field is the derivative of the magnetic coenergy with respect to distance in the axial direction, and is proportional to the square of the current, the square of the number of turns in the coil (300), and said differential magnetic susceptibility. The products are removed at the product barrier (labeled 350). If said isotopic product is of lower magnetic susceptibility, then the coil is moved toward the portion of the cathode near to the solution (6)."**

On Page 32 of the original specification (lines 8-10) teaches the subject matter.

**"A two-stage method which involves a first stage of loading, and then, a second stage of sudden rapid ("catastrophic") flow of hydrogen within the metal. "**

**An apparatus including a novel cathode, novel anode, and heat pipes, to improve reaction rates. An apparatus including means to extract products. An apparatus including inraelectrode barriers to obstruct the movement isotopic fuel."**

## (6) ISSUES

### 35 U.S.C. 112 (first paragraph)

Whether Claims 1-10, 12-19, 21, and 22 and the specification are patentable under U.S.C. §112.

### 35 U.S.C. 101

Whether Claims 1-10, 12-19, 21, and 22 are patentable under U.S.C. §101.

### 35 U.S.C. 112 (second paragraph)

Whether Claims 1-10, 12-19, 21, and 22 are unpatentable under U.S.C. §112 (second paragraph) because the claims are indefinite.

### 35 U.S.C. 102

Whether the subject matter sought to be patented as defined by 1-10, 12-19, 21 and 22 is unpatentable under U.S.C. §102 because of Westfall (US 5,215,631).

Whether the subject matter sought to be patented as defined by 1, 2, 4, 5, 7, 10, 13, 15, 16 and 21 is unpatentable under U.S.C. §102 because of Kinsella et al. (US 3,682,806).

Whether the subject matter sought to be patented as defined by 1-8 and 13-16 is unpatentable under U.S.C. §102 because of Patterson (US 5,318,675) or Patterson (US 5,372,688).

### 1.192c(6)(v)

Whether the Office has shown good-faith execution of MPEP 707.07(j) and MPEP 706.03(d).

Whether the Office has shown good-faith response after Applicant supplied Declarations and arguments.

### **(7) Grouping of claims**

Claim 1 distinguishes and limits the invention, in a process for producing a product using a material which is electrochemically loaded with an isotopic fuel, to a method of controlling the loading which includes in combination, loading said isotopic fuel into said material, then providing means for producing a change in the quantity of said isotopic fuel within said material, creating thereby a catastrophic diffusion flux of said isotopic fuel within said material, providing a diffusion barrier to said diffusion flux of said isotopic fuel within said material, and thereby producing said product.

Claim 4 distinguishes and limits the invention, in a process using an isotopic fuel loaded into a material, to a two-stage method for controlling the loading which includes in combination loading said isotopic fuel into said material, then providing means for producing a change in the quantity of said isotopic fuel within said material, creating thereby a catastrophic diffusion flux of said isotopic fuel within said material.

Claim 13 distinguishes and further limits the invention to an apparatus to produce a product using a material loaded with an isotopic fuel, which includes in combination means to load said isotopic fuel into said material, means to produce a change in the quantity of said isotopic fuel within said material, means to produce a catastrophic diffusion flux of said isotopic fuel within said material, means thereby to produce said product.

Pursuant to 35 USC 112, sixth paragraph, the Appellant has given complete identification of means plus function and step plus function including the structure, material, or acts described in the specification as corresponding to each claimed function with reference to the specification by page and line number, and to the drawings. The Independent and Dependent claims are identified, and concise explanation of their subject matter is also given.

All Claims are separately patentable and do not stand or fall together because they are materially distinct and because the claims are not unduly multiplied and have separate limitations, as recited in the claims. The Arguments for such include the following.



## **ARGUMENTS - 35 USC §112 first paragraph REJECTION**

1. Claims 1-10, 12-19, 21, and 22 have been rejected under 35 U.S.C. 112 by the Examiner, based upon the Examiner's incorrect opinion that the "environment" in which the above-entitled invention operates "does not exist", based upon flawed reference to other old art ("FP" or "F+P") and by systematically ignoring Appellant's (then Applicant's) submitted Declarations of fact and accompanying Exhibits proving the Office wrong or disingenuous.

The Examiner is wrong in this 35 U.S.C. §112, ¶1 rejection for any of several reasons. First, the Examiner's 35 U.S.C. 112, first paragraph rejections are improper, factually disingenuous, substantively inaccurate, legally flawed, in large part not relevant, and therefore unfair.

Despite the Examiner's handwaving, and plea for "rubber-stamping" again of his false statements, there have been no valid substantive precise honest "reasons" in section 2, section 4, section 6, section 7, or anywhere else by the Examiner (who ignores the responses as he discusses other art and then either ignores or destroys Evidence). In this case, the Examiner has ignored the pro se Applicant's arguments, Declarations and peer-reviewed articles which were submitted before FINAL. Most shamefully, the above false sentences by the Examiner are made without any honest foundation. There was NOTHING of substance or relevance in Section 2 or any other section. The rejections have been made ONLY by the Examiner having ignored THIS invention, and only by the Examiner having carefully, egregiously selected, then removed, submitted Evidence, Declarations, and peer-reviewed papers (*vide infra, vide supra*). Each of these points will be addressed below.

## **THE APPLICANT COMPLETELY COMPLIED**

2. Most importantly, for each rejection under 35 U.S.C. 112, first paragraph, the Appellant previously, before FINAL, fully and completely specified the many errors in the rejection, including how Appellant (then Applicant) timely provided evidence surmounting the Examiner's incorrect arguments.

It is a fact that in Applicant's previous Response to the Office, dated 12/3/2002, all of Examiner Palabrica's arguments were decimated. Applicant provided Evidence in the form of publications that rebut the Office.

In Applicant's Communication to the Examiner dated 12/3/2002, the Applicant has specified exactly how he demonstrated what he has described in his application and how the above-entitled invention works and is useful.

In Applicant's Communication to the Examiner dated 12/3/2002, the Applicant has specified exactly how he provided a description which will allow others to build an apparatus that works and will deliver said useful result.

The Applicant's Communication to the Examiner dated 12/3/2002, the Applicant has demonstrated that he has described in his application how the above-entitled invention works and is useful.

In Applicant's Communication to the Examiner dated 12/3/2002, the Applicant specified exactly how he characterized the above-entitled invention in claims which are clear and which avoids describing anything previously described in the prior art.

The Applicant's Communication to the Examiner dated 12/3/2002 demonstrated that the Applicant has characterized the above-entitled invention in claims which are clear and which avoids describing anything previously described in the prior art.

The nature of the invention, along with introduction of some of the Declarations, was discussed in the previous communication from the Applicant to the Examiner, dated 12/3/02, as well as on earlier communications, and thereafter. ALL HAVE BEEN IGNORED regarding their substance, and accompanying Evidence.

Appellant (then Applicant) cited law surmounting the Examiner's arguments, and demonstrating that they are without legal foundation and not the normal standards of review.

Where is the Examiner's substantive response?

When will the Board EVER demand the Examiner respond either to the Evidence, or Declarations, or substantive responses?

3. Third, the Appellant submits that the first paragraph of 35 U.S.C. 112 is complied with fully and completely, for reasons discussed in detail below.

The present invention has operability, is taught in the original specification, and is claimed by the claims.

The original specification described the subject matter defined by each of the rejected claims, and enables any person skilled in the art to make and use the subject matter defined by each of the rejected claims, and sets forth the best mode contemplated by the inventor of carrying out his invention.

The present invention's enablement is borne out by *de jure* by peer-reviewed publications.

The present invention's enablement is borne out by the *de facto* Declarations affirming to said operability and utility (which together manifest enablement).

4. Fourth, in addition, unlawfully and corruptly, the Examiner has not replied to any of the Applicant's comments before FINAL regarding the issues involving 35 U.S.C. §112 ¶1, but in its place, the Examiner merely repeated the same thing over and over. The Examiner did not reply to the majority of the Applicant's previous comments regarding these very same issues involving 35 U.S.C. §112 ¶1 because the relevant documents were again removed, and because there is no accountability in the USPTO.

5. Fifth, the Examiner is entitled to his opinion but not to mischaracterizing the facts. He was informed with Evidence that he was wrong. The second time he did this, he was spouting falsehoods. The third time, he removed Evidence from the federal court and federal documents. The fourth time which the Examiner, Dr. Palabrica has continued his misstatements which are rebutted by Evidence including removed/blackenedout/destroyed/redacted/ignored Declarations, he has pulled others into misprision of felony. There is the appearance of impropriety because in the above-entitled application, Dr. Palabrica prevented said Evidence (which includes his previous lying and removing Evidence) from the Board, itself. None of this is consistent with the Constitution of the United States of America, the Law, or the directives of the US Congress. This will be discussed in detail after the rejections are discussed, below.

6. Sixth, the above, and other, false statements by Dr. Palabrica have been made only by ignoring the Applicant's submitted Declarations, Evidence, and even reports of the Applicant's (now Appellant's) open demonstrations.

NOTA BENE: While the Examiner has been tampering and destroying Evidence in the above-entitled action, the pro se Applicant was preparing to give his second very successful (2nd) OPEN DEMONSTRATION at MIT (Cambridge, MA).

7. Seventh, the above false statements by Dr. Palabrica have been made only by ignoring the Applicant's submitted (before FINAL) peer-reviewed published papers. These peer-reviewed publications show that growing numbers of the scientific community consider the positive results of Appellant's work as being operative and of utility. That includes the American Nuclear Society and the American Chemical Society. It is these individuals in the scientific community who actually research and write the scientific technical papers which undergo peer-review, file patent applications, and attend the Conferences who accurately evaluate inventions, products and publications. This community is defined as those "skilled in the art". They disagree with the Examiner's notion as to the operability and utility of this invention. The peer-reviewed published papers which refute the Office include Swartz, 1994, "Catastrophic Active Medium Hypothesis of Cold Fusion", 44, "Proceedings: "Fourth International Conference on Cold Fusion" sponsored by EPRI and the Office of Naval Research, and Swartz (1998), Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes, Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85, Swartz. (1997), Fusion Technology, 31, 63-74. These are augmented by Swartz, M.R. "Survey of the Observed Excess Energy and Emissions In Lattice Assisted Nuclear Reactions", Journal of Scientific Exploration, 23, 4, 419-436 (2009), Swartz, M., "Excess Heat from Low Electrical Conductivity Heavy Water Spiral-Wound Pd/D<sub>2</sub>O/Pt and Pd/D<sub>2</sub>O-PdCl<sub>2</sub>/Pt Devices", Condensed Matter Nuclear Science, Proceedings of ICCF-10, eds. Peter L. Hagelstein, Scott, R. Chubb, World Scientific Publishing, NJ, ISBN 981-256-564-6, Pages 29-44; 45-54, and 213-226 (2006), Swartz, 1998, Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes, Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher

LaGrange, III) 78, 84-85 and Swartz(97). [\*\*\*\*\*] For years, Dr. Palabrica has removed these publications from the file folders and ignored the rest.

8. Eighth, and very importantly, the above-entitled invention works, and therefore has operability and utility. There IS compliance with 35 U.S.C. §112, first paragraph. The original specification and claims complied and conformed with the Patent Act. Applicant has been willing to reveal to the public the substance of his discovery and "the best mode ... of carrying out his invention," 35 U.S.C. 112, and should be granted "the right to exclude others from making, using, or selling the invention throughout the United States," for a period of 17 years. 35 U.S.C. 154. In return, the federal patent system is supposed to encourage the creation and disclosure of new, useful, and non-obvious advances in technology and design in return for the exclusive right to practice the invention for a period of years [United States v. Dubilier Condenser Corp., 289 U.S. 178, 186 -187 (1933)]. However, in this case, as the Board is aware (and as the public is aware even if the Board continues pretend otherwise), the Applicant has received systematic harassment by certain individuals at the US PTO under color of Law (*vide infra*).

9. Ninth, the invention works without the need for cold fusion or 'excess heat'. It says so right in the original specification.

10. Tenth, this improper unfair, rejection for putative "lack of operability" or "enablement" under 35 U.S.C. §112, ¶1 and "lack of utility" under 35 U.S.C. §101 has only been made by ignoring the original specification and claims, by ignoring the timely-submitted un rebutted Declarations, by ignoring scores of Exhibits and references. The Examiner is wrong because the Examiner did not correctly explain and define the actual invention. Worse, the Examiner wrongly, incorrectly, and maliciously, presumes that THIS invention is the same as used by Drs. Fleischmann and Pons (hereinafter F+P), and uses it as a segue to ignore THIS application.

11. Eleventh, therefore, the cited art pointed to by the Examiner is not relevant for any of several reasons. The cited art utterly fails to describe THIS invention. Also, the "standard theory does not even mention the lattice, which the Applicant and others have now proven to be significantly important.

12. Twelfth, Lattice Assisted Nuclear Reactions (LANR), also known as Condensed Matter Nuclear State Physics (CMNS), and Solid State Nuclear Reactions, and Lattice Enabled Nuclear Reactions and Low Energy Nuclear Reactions (LENR) is real. Despite the determined flawed opinion of the Examiner, cold fusion in lattices is real.

13. Thirteenth, the Examiner is wrong because the Declarations which the Examiner continues to avoid dealing with rebut his flawed notions with respect to operability. Furthermore, the above false statements by Dr. Palabrica have been made only by ignoring the submitted Declarations. The Declarations contain factual statements which detail rebuttals to the Office and support the Applicant's position. The Declarations constitute significant reputable evidence of record and a bona fide case which is quite convincing and persuasive to one who is open-minded and not biased. Applicant's Declarations show precisely that the Examiner is inaccurate on issues of operability, refute all of his points of rejection, and substantially, completely and fully address and precisely dispute all of the Examiner's points of rejection and all matters criticized by the Office. They also prove the Office's notions are wrong in this matter - and more importantly only hostile and discriminatory.

14. The Declarations document Applicant's demonstrations of the Applicant's invention, including one open to the public, at the Massachusetts Institute of Technology [Cambridge, MA] for a week before hundreds of people. Thus, these Declarations support that the invention DOES operate as indicated. They prove that the specification adequately described the subject matter recited in the claims and demonstrate that it operates as stated. The Declarations prove that the adequately written description requirement is met and demonstrate that the teachings of this invention are sufficient for one skilled-in-the-art to have understood the inventor to have been in possession of the claimed invention at the time of filing. The Declarations demonstrate validation, operability, considerable utility, and therefore enablement of the present invention and Applicant's claimed subject matter. They indicate that the teachings in the original specification, claims, and drawings are sufficient and convincing to one of ordinary skill in the art -- heralding operability

and conformity and compliance with the 35 U.S.C. §112, §1 (first paragraph) and the "enablement" requirement.

15. Finally, and as importantly, egregiously, despite the Applicant's peer-reviewed published articles (American Nuclear Society), despite the Applicant's Declarations, despite the Applicant's open demonstrations at MIT, and despite the Applicant's invited lectures to the US Navy, DTRA, and other agencies, the Examiner simply destroys/removes/blackens out the Evidence submitted proving the Examiner has made false statements.

16. Each of these points will now be addressed again. Furthermore, for each rejection under 35 U.S.C. 112, first paragraph (and the rest of the Examiner's rejections), the Applicant and the response below supplied by the Declarants fully and completely specify the errors in the rejection.

17. The Applicant's response will be in three main sections. First, the Applicant will prove the above-entitled Invention, its specification, its subject matter and claims meet all requirements. Second, the Applicant will prove the US Patent Office has ignored Declarations and Evidence proving said Invention, its specification, subject matter, and claims meet all requirements. Third, the Applicant will prove the the US Patent Office violated US law and the US Constitution in its attempt to subvert said Invention, its specification, subject matter, and claims which meets all said requirements.

These points will each now be discussed in detail below --- after it is shown how the Appellant (then Applicant) complied completely. As will be shown, Applicant's original specification and Claims taught the subject matter defined by each of the rejected claims, set forth the best mode contemplated with an adequately written description of how to operate the invention, so that an artisan or those skilled-in-the-art, could practice it without undue experimentation, and distinctly pointed out and claimed the subject matter which constitutes the invention. These teachings were precise, clear, and unambiguous to a person skilled in the art, and adequately presented so that an artisan could practice it without undue experimentation [confer the unrebutted, multiply removed, repeatedly submitted Declarations and *Amicus Curiae* Briefs].

The Appendices "C" and "D" present detailed responses of the Appellant (then Applicant) regarding LANR and other matters in the above-entitled action, which are available for the Board if needed beyond what is in the Appeal Brief.

## **Two-stage catastrophic movement of loaded hydrogen within the metal**

18. The present invention is designed to enable the generation of a catastrophic desaturation of hydrogen-loaded metals, such as palladium. S.N.07/760,970 [now as Continuation in this application] involves a two-stage process involving loading of hydrogen into a metal electrode such as palladium. Applicant taught using a first stage of electrode loading, followed by, a second stage of sudden rapid ("catastrophic") flow of the loaded hydrogen within the metal. Applicant taught in the original specification and claims how this apparatus works and presented objective detailed evidence of the invention. The first stage is the electrode loading, and then, in the second stage a rapid ("catastrophic") flow of hydrogen results within the metal. After the initial loading, said flow (or flux) of hydrogen takes place (pages 15-16,19-22,28,33-34; S.N.07/760,970) until the previously-loaded palladium is spent of its deuterons or the material is otherwise damaged.

19. This generates significant efficient energy which is clean, and has been shown to generate electricity and clean water, and therefore is of incredible utility to everyone on Earth, except for the Examiner and his Supervisors, and, so far, the Board which has been held in the "dark" by removed documents and the Examiner's false statements on federal documents.

The two-stage nature of the present invention was discussed in the previous communication from the Applicant to the Examiner, dated 12/3/02, including on pages 67-68. Where is the Examiner's substantive response? Answer: There is none. In its stead, in an odious manner, the Examiner has AGAIN ignored many of the



Applicant's detailed Arguments. In the light of ignored Declaration and Evidence, this has the appearance of impropriety.

20. In the present case, the palladium is saturated, fully loaded, with isotopic fuel, and then the catastrophic condition is created. The office purports inadequate enablement of "catastrophic desaturation", and that it is indefinite. In fact, contradicting the Examiner, the applicant's peer-reviewed publications about catastrophic desaturation have been published by EPRI, the U.S. Navy, the American nuclear society. Applicant's publications have taught internal diffusion flux of isotopic fuel (hydrogen) as discussed in peer-reviewed journals [Hagelstein, Swartz, Optics and Quantum Electronics, MIT RLE Progress Report, 139: 1, 1-13 (1997); Swartz, 1997, "Phusons in Nuclear Reactions in Solids", Fusion Technology, 31, 228-236 (1997); Swartz, 1994, "Catastrophic Active Medium Hypothesis of Cold Fusion", 4, "Proceedings: "Fourth International Conference on Cold Fusion" sponsored by EPRI and the Office of Naval Research; Swartz, 1997, "Hydrogen Redistribution By Catastrophic Desorption In Select Transition Metals", Journal of New Energy, 1, 4, 26-33]. This is confirmation of Applicant's teachings of internal diffusion isotopic fuel and interstitial barriers. Importantly, these teachings confirm operability as taught years earlier in the original specification and claims.

The Applicant noted that these papers --involving catastrophic desaturation-- underwent peer-review and were published.

21. Furthermore, those who are skilled-in-the-art have agreed that said catastrophic desaturation is a critical issue for the successful performance of the system [Swartz (94B), Swartz (97B)]. The present invention is a divisional of S.N. 07/760,970 ("the '970 application"), a two-stage method to control loading. In the original disclosure of which the present application is a divisional, catastrophic desaturation was presented in several figures and discussed, including the use of pressure, temperature, or other means to generate said catastrophic desaturation. Applicant taught about generating movements of isotopic fuel in the loaded metal ["flux"] on pages OS 15-16, 19, 20, 21, 22, 24, 27, 28, and 34 in the original specification of which this present application is a divisional.

**"The fusion reaction is driven by the catastrophic fractional desaturation of deuterons from the crystalline palladium lattice, previously filled to capacity."**  
 [07/760,970; Original Specification, page 21-22]

22. Because of the obstruction of justice by the Examiner, and the myopia or collusion or unnecessary cruel delay by the Supervisors of the Examiner and those whom oversee such corrupt behavior in the PTO, the Appellant notes that elements of the Applicant's invention have now appeared in foreign issued, later-filed, patents.

## **EXAMINER'S ERRORS REGARDING CRITICAL FEATURES**

### **OF THE PRESENT INVENTION**

23. The Examiner falsely states there is a missing "critical feature".

#### **THE TRUTH - CRITICAL FEATURES WERE SPECIFIED AND CLAIMED AND DISCUSSED PREVIOUSLY**

The Examiner is disingenuous in the matter of a "critical feature" because the applicant has already diligently supplied information of several critical features which were taught in the original specification of the above-entitled application several times. These were fully discussed in the previous communication from the applicant to the Examiner, dated 12/3/02. The nature of the invention, along with introduction of some of the Declarations, was discussed in the previous communication from the Applicant to the Examiner, dated 12/3/02, on page 11 and 12. The operability of this invention was discussed in the previous communication from the Applicant to the Examiner, dated 12/3/02, including on pages 57 through 85. The role of loading in the operability of this invention was discussed in the previous communication from the Applicant to the Examiner, dated 12/3/02, on pages 57-58. The role of the optimal operating point in the operability of this invention was discussed in the previous communication from the Applicant to the Examiner, dated 12/3/02, on pages 59-60 and 66. The equations associated with the loading, and the catastrophic behavior of the loaded isotopic fuel, was discussed in the previous

communication from the Applicant to the Examiner, dated 12/3/02, on pages 61 through 65, and 70-71. Applicant's extensive publications, and supporting publications, was discussed in the previous communication from the Applicant to the Examiner, dated 12/3/02, on pages 72-74.

Furthermore, it was again discussed by Applicant in the Communication of Applicant dated 5/5/03 including therein on pages 77-85.

Where is the Examiner's substantive response to most or all of this? The Examiner has ignored many of the Applicant's detailed Arguments.

Where are the Examiner's responses to these submitted responses by the applicant?

24. TO REVIEW AND SUMMARIZE AGAIN, there are several differences including, without minimizing any of the others not cited:

- 1) Loading control through methods taught in the above-entitled application,
- 2) Control of Loading Flux,
- 3) Optimal Operating Points, and
- 4) Two stage catastrophic movement of loaded hydrogen within the metal

These were discussed in the application, in the cited other applications, the cited published papers, and further in the previous responses to the Examiner (which has been ignored in this respect to a serious degree perhaps inadvertently or unintentionally).

The two-stage nature of the present invention was discussed in the previous communication from the Applicant to the Examiner, dated 12/3/02, including on pages 67-68.

It was again discussed by Applicant in the Communication of Applicant dated 5/5/03 including therein on pages 77 through 85, and 89. Where is the Examiner's substantive response?

Where is the Examiner's substantive response?

**Q. E. D. The Examiner is shown to be disingenuous.**

## REQUISITE LOADING [ #1 IN PATTERNS OF FAILURE]

25. The Examiner falsely states there is "neither an adequate description not enabling disclosure of the parameters of a specific operative embodiment of the invention".

### **THE TRUTH - Loading, the CRITICAL FEATURE, Here Was DISCUSSED PREVIOUSLY**

The role of loading in the operability of this invention was discussed in the previous communication from the Applicant to the Examiner, dated 12/3/02, on pages 57-58. Where is the Examiner's response to Figure 1 therein, also in Applicant's peer-reviewed publication, including Swartz. M., 1994 "Catastrophic Active Medium Hypothesis of Cold Fusion", Vol. 4. "Proceedings: "Fourth International Conference on Cold Fusion"? There is none. Instead, ignoring it, the Examiner inaccurately states there is no disclosure. However, this, and the isotope ratios in the metal and loading, were discussed in the original specification [S.N. 07/760,970, confer also Swartz (97C)], and in the referred to Applications (for example '457 on page 16, lines 11-14), and in reference to the peer-reviewed articles [Swartz (1992); Swartz (1993), SWARTZ (1994)].

The invention at issue in this case, generally speaking, uses a metal such as palladium which has the unique property of internally filling ("loading") with hydrogen, as a sponge fills with water. Loading of a material (palladium) with a hydrogen is neither unproven "theory" nor "incredible" as the Examiner falsely writes, but can be elicited using the teachings of Applicant's other specifications and claims, as cited. Applicant taught how to introduce fuel ["load"] as claimed. As Dr. Scott Chubb stated about the patent application of which this Application is a divisional, in his Amicus Brief,

**"...each deuterium nucleus (D) may effectively dissociate from its electron and freely flow through the metallic substrate ... these nuclei ... are free to move throughout a crystal lattice"**

26. In fact, Applicant has discussed loading in considerable detail in several cases before the Office, and these were even understood by the Federal Appellate Court. Applicant did refer to said applications and cases in the present application. Loading is discussed in each of the referred to patent applications of the Applicant, including '457 where it is discussed on page 16, lines 11-14. [Specifically, in the

'970 application, Applicant taught about loading on pages OS 15-16, 19, 20, 21, 22, 24, 27, 28, and 34 in the original specification.] Applicant's loading technology, consistent with conventional physics, has been published in peer-reviewed journals [Swartz, M., Fusion Technology, 22, 2, 296-300, 1992; 26, 4T, 74-77, 1994; 32, 126-130, 1997; Hagelstein, Swartz, MIT RLE Progress Report, 139: 1, 1-13 (1997); Swartz, Fusion Technology, 31, 228-236 (1997); ICCF-4, (1994); J.New Energy, 1,4,26 (1997); M.Swartz, 1992, "Quasi-One-Dimensional Model of Electrochemical Loading of Isotopic Fuel into a Metal", Fusion Technology, 22, 2, 296-300; Swartz, M., 1994, "Isotopic Fuel Loading Coupled To Reactions At An Electrode", Fusion Technology, 96, 4T, 74-77; "Codeposition Of Palladium And Deuterium", Fusion Technology, 32, 126-130 (1997); Swartz, 1994, "Generalized Isotopic Fuel Loading Equations", and "Cold Fusion Source Book", International Symposium On Cold Fusion And Advanced Energy Systems", Ed. H.Fox, Minsk, Belarus; Swartz, 1997]. These are proof and confirmation of Applicant's teachings and demonstrate and confirm enablement of those teachings, and relevant here, also demonstrates confirmation of the teachings taught years earlier in the original specification and claims of which the present application is a divisional. Furthermore, Figure 1 did show the increase in observed excess enthalpy (or heat, shown along vertical axis) from a palladium (Pd) electrode loaded with deuterons (D) from heavy water. Increased loading is towards the right hand side. Attention is directed not only to the fact that the desired reactions are zero below  $\sim 0.85$ .

Q. E. D. The Examiner is shown to be disingenuous.

27. The Examiner falsely states, ignoring the entire previous responses before Final AND the original specification of the Applicant, that there is not "a written description nor an enabling disclosure".

**THE TRUTH - Written Description Was Complete**

The Examiner is disingenuous. These were described in the original specification through the use of an applied electric field intensity. As fully taught in the disclosure, and the patents which are referred to, the power source generates the applied electric field intensity. The induced drift by the applied electric field is shown schematically in the figure which does not mean that the deuterons travel in such a simple fashion.

The electric field distribution is altered as the solution and system each respond with complex conduction and polarization phenomena. Ionic drift, secondary space charge polarization, propagation of solvated deuterons, deuterons in clathrates, and L-,D-deuteron defects with their ferroelectric inscription in the heavy water, and the formation low dielectric constant bubbles abutting the cathode are the minimum expected. The double layer between the solution and the metal is created both by the cathode fall of ions and other polarization reactions. The mechanisms of dielectric polarization and conduction have been cited in the submitted applications by the applicant which are referred to in the present application. If any are omitted they are now added to this disclosure, to supplement the others. The Examiner is again referred to the following on electrochemistry and continuum electrodynamics, sine qua non to those skilled in the art [Uhlig, H.H., "Corrosion and Corrosion Control", Wiley (1971), BOCKRIS, J., K.N. REDDY, "Modern Electrochemistry", Plenum Press (1970), VON HIPPEL, A. "Dielectric Materials and Applications", MIT Press, (1954); VON HIPPEL, A., D.B. KNOLL, W.B. WESTPHAL, "TRANSFER OF PROTONS THROUGH 'Pure' ICE Ih SINGLE CRYSTALS", J. Chem. Phys., 54, 134, (also 145), (1971), MELCHER, J.R., "Continuum Electromechanics", MIT Press, Cambridge, (1981), also "Electromechanical Dynamics", Part III, Elastic and Fluid Media, H. Woodson, J. Melcher, J. Wiley & Sons, Inc., NY (1968)].

The Examiner has made a deliberate false statement. The Applicant respectfully requested the reason for this vast departure from the normal standards of review.

Futhermore, the equations associated with the loading, and the catastrophic behavior of the loaded isotopic fuel, was discussed in the previous communication from the Applicant to the Examiner, dated 12/3/02, on pages 61 through 65, and 70-71. The material was in the original specification and claims, is known to those skilled-in-the-art, and was addressed previously. Where is the Examiner's substantive response?

Furthermore, it was again discussed by Applicant in the Communication of Applicant dated 5/5/03 including therein on pages 77 thorough 101. Where is the Examiner's substantive response?

The Examiner has again elected to ignore many of the Applicant's detailed Arguments.

28. The Examiner falsely states the "disclosure is insufficient as to which parameters on the right hand side of the  $D+(z)$  equation are spatially dependent".

**THE TRUTH - Equations WERE Discussed**

The Examiner has made a deliberate -- repeated -- false statement: The equations associated with the loading, and the catastrophic behavior of the loaded isotopic fuel, was discussed in the previous communication from the Applicant to the Examiner, dated 12/3/02, on pages 61 through 65, and 70-71.

This was again discussed by Applicant in the Communication of Applicant dated 5/5/03 including therein on pages 77 through 85. Where is the Examiner's substantive response?

The Applicant has explained this before to the Examiner, and his disingenuous comment is made in the face an adequate description and an enabling disclosure of how the distribution is derived by an applied electric field. Furthermore, this is well known to those skilled in the art, and in addition, the applicant gave the Examiner references. The applicant did state what terms on the right hand side are spatially dependent. Furthermore, is another example where the Examiner remains vicious in his attack against the applicant, rather than complying with the standards of review. The parameters which the Examiner is having trouble understanding are well known in the field. Those skilled in the art understand that the applied electric field influences the spatial distribution of deuterons in aqueous solution. Without significant convection, the flux ( $J_i$ ) of any  $i$ th species (here deuterons) results from diffusion down concentration gradients and electrophoretic drift. For additional background, the Office was referred to Swartz, M., "QUASI-ONE-DIMENSIONAL MODEL OF ELECTROCHEMICAL LOADING OF ISOTOPIC FUEL INTO A METAL", Fusion Technology, 296-300 (1992) Swartz, M., "ISOTOPIC FUEL LOADING COUPLED TO REACTIONS AT AN ELECTRODE", ICCF-4 (1993); Swartz 97C, 97B. These equations are complex because they include the differential isotope diffusivity, electrophoretic mobility, solubilities and the range of susceptibilities of the materials and products involved, which have parameters and vary with temperature. Applicant's writings, including the original specifications filed with the Patent Office go on with how the results of the mathematical expression concerning the deuteron flux into palladium relates to the applied electric field intensity.

The equation is the first of the quasi-1-dimensional model of loading which offers insight into the processes because it indicates how both competitive gas evolving reactions at the metal electrode surface and the ratio of the applied electric field energy to thermal energy [ $k_B \cdot T$ ] are decisive in controlling the loading of the metal by the deuterium. The equation can be examined for its relation to thermal processes by substitution using additional non-dimensional parameters and the Einstein relation. Coupled equations thus determine the distribution of deuteron species in the bulk solution. The mathematical solutions are determined both by the boundary conditions and by conservation of mass. The Q1D model indicates that the deuteron loading rate into the electrode is critically linked to gas evolution and is also first order on  $mD \cdot E$ . This loading rate equation (equation 3) relates deuteron availability (secondary to the applied electric field) to the losses of deuterons to both gas evolution and the fusion reactions. One simple but important corollary is that the evolution of  $D_2$  gas and deuteron loading to the palladium cathode are mutually exclusive for any given applied electric field. Another important corollary is that this NOT ELECTROLYSIS. As Applicant taught in Swartz(92), and Swartz (89), electrolysis is the opposite of what is desired.

This is yet another difference from all other cited art.

29. The correct dimensional analysis begins with the equation describing the quasi-1-dimensional model of loading. This offers insight into the processes because it indicates how both competitive gas evolving reactions at the metal electrode surface and the ratio of the applied electric field energy to thermal energy [ $k_B \cdot T$ ] are decisive in controlling the loading of the metal by the deuterium. As Applicant taught, the loading flux [of the isotope of hydrogen into the cathode], must be distinguished both from the gas evolving flux, and even from the total current, as well ( Swartz 1992).

**"The three additional components of deuteron flux must be considered. The first is the entry of deuterons into the bulk of palladium which constituted the cathode. That flux is described as  $J_e$ , the rate at which deuterons physically enter the palladium cathode. The second deuteron flux is that component lost at the cathode to gas evolution ... ( $J_g$ )...  $J_f$  is the the flux of deuterons lost to fusion." [Swartz, M., "QUASI-ONE-DIMENSIONAL MODEL OF ELECTROCHEMICAL LOADING OF ISOTOPIC FUEL INTO A METAL, Fusion Technology, 296-300 (1992)]**



The loading flux [of the isotope of hydrogen into the bulk volume of the palladium cathode] is fundamental to the entire understanding of these phenomena, and it was explicitly taught in the original specification. The loading flux must also be distinguished both from the gas evolving flux, and even from the total current, as well.

30. The Examiner falsely states that the disclosure is "insufficient as to what exactly are the terms a and "n".

**THE TRUTH - Terms Defined and Understood by Those Skilled-in-the-Art**

With all due respect, these terms were discussed. Background from the Examiner on fugacity against includes Uhlig, H.H., "Corrosion and Corrosion Control", Wiley (1971) and BOCKRIS, O'M, J., K.N. REDDY, "Modern Electrochemistry", Plenum Press (1970), especially Bockris. Again, the Examiner is incorrect because pressure range is discussed in the original specification of '970, and in the referred-to Application ('457) with reference to number 132 in Figure 3, on page 17, lines 18-22, therein, and in the other peer-reviewed publications cited above. C1 is a constant of proportionality, as discussed in the original specification.

31. The Examiner falsely creates bogus parameters having nothing to do with THIS invention.

**THE TRUTH - The Examiner Leads Away from this Invention**

For example the Examiner inaccurately states there is no disclosure of "surface area-to-volume requirement for the reactor". However, this is inaccurate because the relevant issues of temperature, mass, and thermal capacity, fraction saturation, etc. which were discussed in the original specification. If the Examiner feels that his notion defeats conventional electrophysics and solid state physics and nuclear physics, then perhaps he should state with specificity his question and the reason for it, rather than just "brick-toss" words which are not consistent with electrical engineering practice.

32. As another example, the Examiner leads away from THIS invention by bogus reference to impurities.

**THE TRUTH - Composition was DISCUSSED PREVIOUSLY.**

As one example, the issues of gel were addressed in another and were answered before in the previous communication. Where is the Examiner's response to

Applicant's description of composition of electrodes and solution? Swartz (07/339,976; filed April 18, 1989, a specification pending before the Patent Office) and Swartz (07/371,937; filed June 27, 1989, specifications pending before the Patent Office, now as a Continuation) taught codeposition of palladium salts.

**"the combination of palladium salts ... and the means to cathodically codeposit said materials directly onto a cathode.**

[Swartz; US 07/39,976; April 18, 1989]

The parent of the above-entitled application goes even further and teaches the use of gels and other strategically configured systems, and the present application discusses the advantages of a dissolving palladium anode.

As important, the isotope ratios in the metal and loading, were discussed in the original specification [S.N. 07/760,970, continued as S.N. 09/750,765; confer also Swartz (97C)], and in the referred to Applications (for example '457 on page 16, lines 11-14), and in reference to the peer-reviewed articles [Swartz (1992), Swartz (1993), SWARTZ (1994)].

This was again discussed by Applicant in the Communication of Applicant dated 5/5/03 including therein on page 87. Where is the Examiner's substantive response?

Contamination was discussed in the previous communication from the applicant to the examiner, dated 12/3/02 and in many of the other applications, including '457. The Examiner was referred to the following on electrochemistry and continuum electrodynamics, sine qua non to those skilled in the art [Uhlig, H.H., "Corrosion and Corrosion Control", Wiley (1971), BOCKRIS, J., K.N. REDDY, "Modern Electrochemistry", Plenum Press (1970), VON HIPPEL, A. "Dielectric Materials and Applications", MIT Press, (1954); VON HIPPEL, A., D.B. KNOLL, W.B. WESTPHAL, "TRANSFER OF PROTONS THROUGH 'Pure' ICE Ih SINGLE CRYSTALS", J. Chem. Phys., 54, 134, (also 145), (1971), and MELCHER, J.R., "Continuum Electromechanics", MIT Press, Cambridge, (1981).

33. The Examiner is disingenuous about the 'only possible "products"'.  
**THE TRUTH - Products Including Loading, Heat and Helium-4. ARE defined**

This was discussed in the previous Communication of 12/3/02 with the Examiner on page 69. Where is the Examiner's response? Furthermore, it was again discussed by Applicant in the Communication of Applicant dated 5/5/03 including therein on pages 77-88. Where is the Examiner's substantive response?

Instead, the Examiner, inadvertantly or unintentionally appears to just ask the same question.

**It is unfair for the Examiner to change "loading" to "cold fusion" and it is unfair for the Examiner to change "heat" to "excess heat", but that is consistent with the Office's systematic attempt to usurp the Applicant's Constitutional and civil rights.**

[bold and underlined for emphasis]

With all due respect to the Examiner's comments, the original specification of the above entitled application did in fact cite heat as a product of the desired reactions. The present application concerns loading, and is generally speaking a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal and means to extract product using magnetic field inhomogeneity, based differential magnetic susceptibilities. Heat is discussed as a product. In contrast, neutrons were not discussed because their production is vanishingly small, to the degree that exists at all for reasons discussed in the Applicant's published paper [Swartz, 1997, "Phusons in Nuclear Reactions in Solids", Fusion Technology, 31, 228-236 (1997)].

34. The Examiner is disingenuous about "alleged astronomical pressures".

**THE TRUTH - The Examiner discusses Fugacity which was Discussed and Ignored by the Examiner**

The Examiner has made another deliberate false statement. This was discussed in the previous Communications before FINAL with the Examiner on page 71. Where is the Examiner's response?

With all due respect, fugacity is a calculated pressure within an electrochemically used electrode. Background from the Examiner on fugacity against includes Uhlig; H.H., "Corrosion and Corrosion Control", Wiley (1971) and BOCKRIS, O'M, J., K.N. REDDY, "Modern Electrochemistry", Plenum Press (1970), especially Bockris. Again, the Examiner is incorrect because pressure range is discussed in the original specification of '970. It was even understood in federal appellate court where it was uncovered the Examiner had misled (polite for 'lied to' to Board of Patent Appeals) which is why Examiner Palabrica and his Supervisors (and conspirators, if they exist) has/have withheld THIS Appeal Brief for eight years even though it was *pro se*.

35. The Examiner is disingenuous about 'products are removed at the product barrier'.

**THE TRUTH - The Description using an Inhomogeneous Magnetic Field WAS Given**

The Examiner has made another deliberate false statement. As specified in the original disclosure: The pumping action upon products [other than heat] is from the action of an applied force exerted upon said product (in this case an isotope of hydrogen: tritium). The generation, and calculation, of the force induced by an applied magnetic field intensity upon the desired isotope which is generated within the CAM reactor, is derived as follows.

**"An inhomogeneous magnetic field intensity is applied by coil labelled 300 to one portion of the cathode (1). Said magnetic field is driven by the power supply (labelled 301) in the figure. The spatially inhomogeneous magnetic field could also be created by a superconductor."**

[07/760,970; the present application in Continuation; Underline added for emphasis]

Ampere's Law is used to calculate the line integral of the magnetic field intensity around the applied electric current. That magnetic field intensity exists mainly in the gap between the high permeability rod (around which the coil has been wound) and includes the volumes encompassing the desired isotope [cf. Figure 18 of the original specification].

**"The differential magnetic susceptibility between isotopic fuel and the nuclear fusion product is used to magnetically pump the product to and through the barrier labelled 350. At that location there is a buildup of the isotope with**

**the larger magnetic susceptibility due to said differential magnetic susceptibility."**

[07/760,970; the present application in Continuation]

The magnetic field intensity can be derived by inspection in the gap region based upon Gauss' Law, which implies that the divergence of the magnetic flux density is zero. Therefore, the use of a volume with one surface abutting the volume containing the desired isotope and the other surface abutting the end of said rod, results in a ratio between the two magnetic fields.

The magnetic field as taught in the above-entitled application is spatially inhomogeneous. The original specification and claims of the present invention also taught and claimed a separation system to extract an precise product - another feature of great utility.

A magnetic field inhomogeneity, based upon the differential magnetic susceptibilities [cf. Swartz and Declarations; A10-A21], creates forces which make this a

**"non-linear device in the sense that the containment field distribution is spatially non-uniform. ... the ... invention is therefore a chemical collection device."**

[Straus Declaration 1994]

The magnetic force, resulting from the applied magnetic field, is the spatial derivative of the magnetic coenergy with respect to distance:

**"The magnetic force resulting from the applied magnetic field is the derivative of the magnetic coenergy with respect to distance in the axial direction, and is proportional to the square of the current, the square of the number of turns in the coil (300), and said differential magnetic susceptibility. The products are removed at the product barrier (labelled 350). If said isotopic product is of lower magnetic susceptibility, then the coil is moved toward the portion of the cathode near to the solution (6)."**

[07/760,970; the present application in Continuation]

As an alternative means of calculating the applied magnetic force upon the desired isotope is to use the Maxwell Stress Tensor. The Maxwell Stress Tensor is based upon the orthogonal, and parallel, components of the magnetic field intensity over the surface of the desired isotope. The stress tensor is quite complex. The calculated force is based upon the spatial divergence of the stress tensor. Both methods of deriving the magnetic force are identical

These solutions are extremely complex but an introduction to this physics in a far simpler system [as regards ferrofluids and not the more complicated invention and products of the above-entitled application] is available in "*Electromechanical Dynamics*", Part III, Elastic and Fluid Media, H. Woodson, J. Melcher, J. Wiley & Sons, Inc., NY (1968), pages 772 to 777 [cf. figures 12.2.21 and 12.2.24]. The important result, as stated in the original specification, is that energy of the entire system decreases by the movement of the higher susceptibility isotopes towards, and into, the region containing the greatest magnetic field intensity. The Examiner ignores *In re Brana* and *In re Eltgroth*, 419 F.2d 918, 164 USPQ 221 (CCPA 1970) which demand that the Examiner must establish a reason to doubt an invention's asserted utility, and the loading of an isotopic fuel into a material by an applied electric field, using a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal and means to extract product using magnetic field inhomogeneity, based differential magnetic susceptibilities [cf. Swartz and Straus Declarations] is not 'incredible' or 'unbelievable' like the Examiner appears to purport. This invention is quite believable.

36. The Examiner improperly leads away from THIS invention, by his invoking 'dimensional ratio of electrodes to their spacing size', "sizes of anode and cathode relative to the space between them", "three devices are so held in place by clips, "some clips are electrically conductive and some are insulators", and the like.

**THE TRUTH - REFERS TO DIFFERENT APPLICATIONS '691 and '381**

In fact, in case number 07/760,970, of which the present case is a divisional application, several methods are specified for removing said heat heat. In S.N. 09/579,381 which is another divisional, taught is a method for integrating three (or

more) reactors into a power and product grid with means to extract product, including heat, through the socket, and with means for using electrical and thermal connectors held in a mechanical connecting system, means including clips and sockets, means to allows replacement and coupling to the control system, means using conductive and insulating clips, means to extract the heat from the reactor, means including heat pipes, diamond, or composites of diamond in thermally conductive epoxy filled with diamonds, means including a heat dissipative radiator, and means including separation of the anodes and anodic connectors from the cathodes and cathodic connectors. Simply put, '381 is an improvement for heat removal and integration of smaller units into larger assemblies. In the preferred embodiment, the apparatus described by the present application is a device shaped like a fuse and can be easily placed into, or removed from, an assembly. The damage or rundown of one unit "is thus easily exchangeable by replacement with a functioning one", which is re-inserted, as taught in the above-entitled application, into mechanical restraining, electrical, and thermal connectors (labelled 94, 96, and 97) and further restrained with clips (labelled 92). The clips that can be used in these devices capable of integrating reactors involving a material loaded with hydrogen are well known to those who work in the art with the exception of the fact that in the present application there is the novel and nonobvious method of having product transfer taken place to the socket itself. '381 involves product transfer through the socket itself.

Thus, '381 teaches a method for integrating three (or more) reactors into a power and heat grid with means to extract product, with means for using electrical and thermal connectors held in a mechanical connecting system, means including clips and sockets, means to allows replacement and coupling to the control system, means using conductive and insulating clips, means to extract the heat from the reactor through the socket, means including heat pipes, diamond, or composites of diamond in thermally conductive epoxy filled with diamonds, means including a heat dissipative radiator, and means including separation of the anodes and anodic connectors from the cathodes and cathodic connectors.

The invention at issue in this case, '765, claimed by Claims 1-10, 12-19, 21, and 22, is generally speaking a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal and means to extract product using magnetic field inhomogeneity, based on differential magnetic susceptibilities. Each of these features, and those of the original specification of which this is the divisional, is novel. The original specification describes the subject matter defined by each of the rejected claims, and enables any person skilled in the art to make and use the subject matter defined by each of the rejected claims, and sets forth the best mode contemplated by the inventor of carrying out his invention. The novelty and usefulness of the original specification was demonstrated to be correct at the time of the original filing in Fusion Technology (of the American Nuclear Society) and elsewhere which demonstrate operability and utility [validation]. These include, but are not limited to, the following: Swartz, 1994, "Catastrophic Active Medium Hypothesis of Cold Fusion", 4, "Proceedings: "Fourth International Conference on Cold Fusion" sponsored by EPRI and the Office of Naval Research, Swartz (1998), Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes, Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85, Swartz. (1997), Fusion Technology, 31, 63-74.

### **SUMMARY OF EXAMINER'S DEVIATIONS**

#### **FROM THE STANDARDS OF REVIEW**

37. Where is the Examiner's response to the fact that Applicant has elected to submit his theories (and experimental work) before peer review in fusion technology run by the American Nuclear Society in hot fusion community since 1992. These, they surmounted peer-review and were published, and cited to the Office to explain the observed cold fusion phenomena, and published with other demonstrations of this field (including Hagelstein 1993A, 94; Takahashi 91, Swartz 1992, 94A, 96B, 97A, 97B; McNally 89; Hora 93; Johnson 94; Mills 94; Mills 95; Li 95; Kim 90, 94A, 94B, 95, 96; Matsumoto 89; Chubb 90, 91, 94A, 94B; Szpak 91; Tajima (90);



Schneider 89; Rice 90, Zhu 90, and Bush 91A). Where does the Office offer a single equation, graph, or serious theory to dispute anything in the above entitled original specification and claims? Nowhere.

Where is the Examiner's response to the Optimal Operating Points which the Applicant has taught? Where is the Examiner's response to Figure 2 from Applicant's peer-reviewed publication presented in the last communication to the Examiner? There is none. Instead, ignoring it, the Examiner inaccurately states there is no disclosure,. However, "optimal operating points" must be understood to successfully use LENR/CF systems. Many "negative" results the result of the failure to operate the system at the optimal operating point. Figure 2 showed the biphasic response of the products (heat, helium-4, tritium) of these systems to increasing input electrical driving power. The horizontal axis represents the electrical input power and is logarithmic. The nickel light water data is from Swartz; the palladium heavy water data are from Miles (USN) and Szpak (USN). The data reveal relatively narrow loci of optimal operating points. Driving with electrical input power beyond the peaks (optimal operating points) does not help the production of the desired product but yields a falloff with increasing input power. Optimal operating points account for some of the widespread difficulties in observing these phenomena because of driving the systems inadvertently or unintentionally outside of the optimal operating point (Swartz. M., Journal New Energy, 4, 2, 218-228 (1999), Swartz. M., Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85); Swartz. M., G. Verner, A. Frank, H. Fox, Journal of New Energy, 4, 2, 215-217 (1999); Swartz. M., 1997, Fusion Technology, 31, 63-74). Applicant cites his publications and other applications. In '457 Applicant taught "increasing through a series of at least three incremental steps the electric power drive conditions of said electrical circuit" on page 15, lines 15-20, and page 23, lines 14-17. Furthermore, in '457 and in the corresponding figures in Swartz(97), there are graphs of the output [Figure 6, labels 701, 702] and the V-I (voltage current) characteristics [Figure 5, labels 503, 510, 519, 520, 504, 521].

Where is the Examiner's response to Applicant's description of barriers which are used to strategically inhibit the flow of isotopic fuel. They are not in the cited patents and art? There is none. As taught in the original specification, Applicant has described barriers which are used to strategically inhibit the flow of isotopic fuel (deuterons in palladium by boron, or protons in nickel by gold) (confer Appendix C which is in the file record, and included here again for reference, and the other cited references including the published peer-reviewed publication Swartz, 1998, Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes, Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85; Swartz, 1997, "Biphasic Behavior in Thermal Electrolytic Generators Using Nickel Cathodes", IECEC 1997 Proceedings, #97009; Swartz, 1998. The breadth of this subject requires an Appendix which was attached hereto and has been part of the file record of the '970. This introduction to the subject delineates many different barriers which can be divided into classes based upon characteristics discussed therein. There are a spectrum of "barriers" in this field. Some are structural, some are diffusive, some enable electrophoresis, some dielectrophoresis and its magnetic equivalent. Many are fully specified in the present inventions's original disclosure, many novel and unobvious from prior art. The full charging is discussed in detail in the referred to peer-reviewed publications including Swartz (92), Swartz (94), Swartz (97A), Swartz (98A), and Swartz (98B).

38. In summary, Applicant's specification contains much data to show that the disclosed apparatus functions. Applicant made a documented *prima facie* case specific and substantial credible utility, and has given open demonstrations at the Massachusetts Institute of Technology, and oral reports to the US Navy and DTRA and other agencies, whose memoranda and documentation has been shared with the Office. It is a fact that these were discussed at length, including said information, and they were especially relevant .... which is why Examiner Palabrica removed them.

As required, the Applicant's Communication to the Examiner dated 12/3/2002, demonstrated that the Applicant, in the above-entitled application, fully provided a description which will allow others to build an apparatus that works, and will deliver

the useful result. Applicant's timely-submitted documents were received by the USPTO.

Again, the Board and the Applicant are deprived of submitted Evidence as an agenda of deception and Evidence destruction continues run by Dr. Palabrica and his Supervisors.

☒ **The Examiner is entitled to his opinion but not to systematically mischaracterizing the facts.**

39. As discussed in detail below, the Examiner has acted in a corrupt manner and has removed/destroyed/blackenedout the *pro se* Applicant's submitted discussed and listed publications and Declarations which did rebut his previous disingenuous and inaccurate statements, even though they were provided in printed form AND were discussed in the Remarks before FINAL. They were received by the USPTO postal office. The receipt was indelibly shown by the postal card certified with the USPTO Official stamp. The Examiner is responsible for keeping track of the records and documents filed.

40. As discussed in detail below, the Examiner has acted corruptly in the Final. The Examiner's unprofessional behavior now includes his obsessive repetition of the exact same comments he made previously which were already rebutted including in the references, documents, submitted Declarations, peer-review publications which the Examiner has chosen to censor/remove/destroy/corrupt (and discussed in detail below) with the salient appearance of impropriety. The Evidence was removed precisely because it is MORE than sufficient [In re Brana, 51 F.3d at 1566, 34 USPQ2d at 1441] to meet the

**"burden shift ... to provide rebuttal evidence sufficient to convince such a person of the invention's asserted utility".**

The Examiner is entitled to his opinion but not to mischaracterizing the facts over and over - and then removing the Evidence demonstrating he was serially lying, misleading, and being mostly disingenuous, at best.

41. So far there has not been even one attogram of shame or accountability at the USPTO. Thousands of Americans now hurt by the USPTO think a Grand Jury, or Congressional inquiry, and/or military investigation are required. For how many decades will the Board encourage the USPTO to destroy/remove/blackout/ignore Evidence? America is at War over energy, and the USPTO removes Evidence submitted from the DIA, DTRA, DARPA, NASA, USNAVY, and others so the USPTO can continue to mislead the Court and the Board and the public which is getting fed up.

- ☒ **The Examiner is not entitled to remove/destroy/blacken out/ignore timely-submitted, received, Evidence from a *pro se* Applicant which shows him wrong**

42. As discussed in detail below, in addition, every single misstatement, disingenuous comment, and false statement made by the Examiner in the FINAL is addressed and rebutted. As discussed in detail below, there is the appearance of impropriety by the Examiner's failure to respond to Arguments and his removal/destruction of submitted Evidence consisting of relevant Declarations, peer-reviewed publications, and federal documents, relevant to THIS ABOVE-ENTITLED CASE.

### **Undisputed Fact: Claims Are Compliant**

#### **with 35 U.S.C. §112 First Paragraph.**

43. The Examiner misleads the Board about the Claims involving allusion to sections void of substance. As shown, no substantial reasons were given in "section 4" or any other section. Every statement of the Examiner has been rebutted by Declarations and Evidence. No response to the submitted documents by Applicant were given in "section 4". There is the appearance of impropriety and this will be discussed in detail below, and in other venues.

Clearly, one of the most important points rebutting the Office rejections under 35 U.S.C. 112, first paragraph is that the claimed invention should be the focus of the utility requirement.

**"Each claim therefore, must be evaluated on its own merits for compliance with all statutory requirements" (MPEP 2107.01, I.).**

Each step is reasonable and has operability. Each step is able to each stand alone (MPEP 2111.02) with respect to operability.

The preamble of independent Claim 1 is reasonable and demonstrates utility:

The appealed claims do not stand or fall together. claims 1, 4, and 13 are separately patentable and do not stand or fall together because they are materially distinct with respect to 35 USC 112 first paragraph. claims 1, 4, and 13 are separately patentable because they are not unduly multiplied, have separate limitations, and are required because the invention described by the original specification of the above-entitled application is very complex. Claim 1 distinguishes and limits the invention, in a process for producing a product using a material which is electrochemically loaded with an isotopic fuel, to a method of controlling the loading which includes in combination, loading said isotopic fuel into said material, then providing means for producing a change in the quantity of said isotopic fuel within said material, creating thereby a catastrophic diffusion flux of said isotopic fuel within said material, providing a diffusion barrier to said diffusion flux of said isotopic fuel within said material, and thereby producing said product. Claim 4 distinguishes and limits the invention, in a process using an isotopic fuel loaded into a material, to a two-stage method for controlling the loading which includes in combination loading said isotopic fuel into said material, then providing means for producing a change in the quantity of said isotopic fuel within said material, creating thereby a catastrophic diffusion flux of said isotopic fuel within said material. Claim 13 distinguishes and further limits the invention to an apparatus to produce a product using a material loaded with an isotopic fuel, which includes in combination means to load said isotopic fuel into said material, means to produce a change in the quantity of said isotopic fuel within said material, means to produce a catastrophic diffusion flux of said isotopic fuel within said material, means thereby to produce said product.

### **Undisputed Fact: Peer-Review Publications Confirm Compliance with §112 First Paragraph**

44. The Examiner has only made his repeated false statements by ignoring the peer-reviewed, and other, timely submitted publications. How is that possibly fair without the appearance impropriety for two decades?

**The Examiner' statements are disingenuous and he, and his supervisor(s) knows these to be false statments**

[underlined and bold for emphasis

]. First, the disclosure does cite and contain reputable evidence quite sufficient to those skilled in the art to support its claims. Applicant's peer-reviewed publications prove that the present invention was operable at the time it was filed, and demonstrate validation. The published papers include those in the peer-review proceedings of ICCF-14 (reviewed by the members of the USNavy NRL Laboratories, SRI, MIT, etc.) [\*\*\*\*\*]. These include, relevant to the above-entitled application and invention (as cited therein, but ignored by the Examiner) Swartz, M.R., Bass, R.W., "Empirical System Identification (ESID) and Optimal Control of Lattice-Assisted Nuclear Reactors," Proceedings of the 14th International Conference on Condensed Matter Nuclear Science and the 14th International Conference on Cold Fusion (ICCF-14), 10-15 August 2008, Washington, D.C. Editors: David J. Nagel and Michael E. Melich, ISBN: 978-0-578-06694-3, 497, (2010), and Swartz, M.R. and L. Forsley, "Analysis and Confirmation of the "Superwave-as-Transitory-OOP-Peak" Hypothesis", Proceedings of the 14th International Conference on Condensed Matter Nuclear Science and the 14th International Conference on Cold Fusion (ICCF-14), *ibid.*, (2010).

The other relevant published papers include Swartz, M.R. "Survey of the Observed Excess Energy and Emissions In Lattice Assisted Nuclear Reactions", Journal of Scientific Exploration, 23, 4, 419-436 (2009), Swartz, M., "Excess Heat from Low Electrical Conductivity Heavy Water Spiral-Wound Pd/D<sub>2</sub>O/Pt and Pd/D<sub>2</sub>O-PdCl<sub>2</sub>/Pt Devices", Condensed Matter Nuclear Science, Proceedings of ICCF-10, eds. Peter L. Hagelstein, Scott, R. Chubb, World Scientific Publishing, NJ,

ISBN 981-256-564-6, Pages 29-44; 45-54; and 213-226 (2006); Swartz, 1998, Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes, Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85.

These peer-reviewed publications (like the timely submitted Declarations) establish facts. Such Evidence consisting of published peer-reviewed scientific articles prove Applicant was correct on the filing date of the application. The publications submitted by the Applicant are sufficient to convince one of ordinary skill in the art of the invention's utility (Swartz, 232 F.3d at 864).

45. Second, the Applicant has presented evidence of heat and nuclear reaction products measured by the members of the US Navy and of interested to the DIA. For whom, exactly, does the Examiner work to claim otherwise with false statements, again sent through the US mail over state lines. Attention is directed to Exhibits "B" and "C". Both DIA and DTRA recognize the applicant AND his invention and find utility. Confer Exhibit "B". In said Dec. 12, 2006, the Defense Threat Reduction Agency Ft. Belvoir, Virginia, Report the Advisory Board Findings and Recommendations say for CF/LANR/LENR, as follows:

**"There is good evidence of excess heat and transmutation."**

46. Following receipt of Applicant's Communication to the Examiner dated 12/2/2011, (which provided Evidence in the form of Declarations and publications that rebut the Office) the Office personnel, i.e. the Examiner, should have reviewed the original disclosure, any evidence relied upon in establishing the *prima facie* showing, any claim amendments, and any new reasoning or evidence provided by the applicant in support of an asserted specific and substantial credible utility/operability. Simply put, per *In re Oetiker*, the Examiner was required to have a responsive argument. This will be documented below in considerable detail. The Applicant's submitted peer-reviewed articles are MORE than sufficient [In re Brana, 51 F.3d at 1566, 34 USPQ2d at 1441] to meet the "burden shift ... to provide rebuttal evidence sufficient to convince such a person of the invention's asserted utility".

Instead of being properly responsive, or lawful, the Examiner has not responded to the Applicant's arguments. They have been ignored by the Examiner showing an appearance of impropriety. Instead of being properly responsive, or lawful, the Examiner has not responded to the Applicant's peer-reviewed publications by the American Nuclear Society. They have been ignored by the Examiner only to be surpassed by showing an appearance of impropriety.

47. Why has the Examiner not replied to any of the Applicant's previous comments regarding "Applicant's peer-reviewed publications" -- but instead destroyed the Evidence? The Examiner's statements are disingenuous and he, and his supervisor(s) knows these statements are false. The notion presented by the Office has been that lattice related nuclear reactions do not exist, and that there is no nuclear chemistry in deuterated palladium alloys. However, that is not true. DTRA disagrees with the Office's notion and assessment. DARPA disagrees with the Office's notion and assessment. The US Navy disagrees with the Office's notion and assessment. NASA disagrees with the Office's notion and assessment. Thousands of scientists disagree with the Office's notion and assessment. The Declarations demonstrate the existence of lattice assisted nuclear reactions including the generation of heat. Nothing of substance or scientific foundation has been presented by the Office or other Art which rebuts the content of the above-entitled application OR the Declarations or the *Amicus Curiae* Briefs of Straus, Chubb, Mallove, Fox, and Valone. Nor has the Examiner presented any argument of substance to support his incorrect, proven-wrong, notions with respect to any of the matters discussed therein

ANSWER: The disclosure does cite and contain reputable evidence quite sufficient to those skilled in the art to support its claims. Applicant's peer-reviewed publications prove that the present invention was operable at the time it was filed, and demonstrate validation. The published papers include those in the peer-review proceedings of ICCF-14 (reviewed by the members of the US Navy NRL Laboratories, SRI, MIT, etc.)



48. The Examiner knows there is reputable evidence of record rebutting him. The Applicant has again submitted peer-reviewed published papers which refute the Office. As in the past, they fully address all matters criticized by the Office- which may explain why they are precisely ignored by the Examiner now, and removed from the file folder, previously. [ In Applicant's application '457, Applicant submitted Swartz(97) to the Office eleven (11) times, but it was substantively ignored and repeatedly removed from the file. ] Said peer-reviewed published papers expose the Office's antiscientific discrimination regarding "cold fusion". These peer-reviewed publications show that growing numbers of the scientific community consider the positive results of Appellant's work as being operative and of utility. That includes the American Nuclear Society and the American Chemical Society. It is these individuals in the scientific community who actually research and write the scientific technical papers which undergo peer-review, file patent applications, and attend the Conferences who accurately evaluate inventions, products and publications. This community is defined as those "skilled in the art". They disagree with the Examiner's notion as to the operability and utility of this invention.

#### LAW

49. There has never existed honest doubting by objective unbiased observers of the objective truth of the statements relied on for enabling support. In this case, given the submitted [and received] Declarations, reason never existed doubting the objective truth of the statements relied on for enabling support. Therefore no basis exists for a rejection under either section 112, ¶1, for lack of enablement as a result of "the specification's ... failure to disclose adequately to one ordinarily skilled-in-the-art 'how to use' the invention without undue experimentation," or section 101 for lack of utility "when there is a complete absence of data supporting the statements which set forth the desired results of the claimed invention." [Environtech Corp. v. Al George, Inc., 730 F.2d 753, 762, 221 USPQ 473, 480 (Fed. Cir. 1984); also In re Brana, 51 F.3d 1560, 1564 n.12, 34 USPQ2d 1436, 1439 n.12 (Fed. Cir. 1995)].

Given the multiple destroyed/removed/sequestered/"lost" peer-reviewed publications submitted, the Examiner's action is inconsistent with the reasoning of *In re Vaack* [947 F.2d 488, 495-96, 10 USPQ2d 1438, 1444 (Fed. Cir. 1991)] which states that an enablement rejection under section 112, ¶1 is only appropriate where the written description fails to teach those skilled-in-the-art, like the Declarants, to make and use the invention.

### **Undisputed Fact: Open Public Demonstrations Confirm Operability and Compliance with §112 First Paragraph**

50. The Examiner is incredibly disingenuous when he ignores the Appellant's (then Applicant's) open demonstrations at MIT.

#### **THE TRUTH: The Examiner Has Again Overlooked Appellant's Open Demonstrations**

Of course there is the "possibility of exhibiting" as the Examiner purports precisely because the Applicant gave the first (yes, the first) open demonstration of these systems at ICCF10. The Examiner has deliberately overlooked Evidence submitted by the *pro se* Applicant, already introduced into the record. The above, and so many other, false statements and acts of endless discrimination by Dr. Palabrica have been made only by ignoring Applicant's open demonstrations. Furthermore, while the Examiner has been tampering and destroying Evidence and previous Arguments, the *pro se* Applicant was giving his second (2nd) OPEN DEMONSTRATION at the Massachusetts Institute of Technology (RLE and EE Building) during January, February and March, 2012.

The Evidence includes submitted information including testimony and data regarding Applicant's open demonstration at MIT and before many witnesses, including several pictures' urls on the Internet at <http://www.std.com/~mica/jeticcf10demo.html> and <http://www.lenr-canr.org/Collections/ICCF10.htm>

Unlike the Examiner, they tell the truth and have written Declarations, letters, and affidavits which have been ignored. This submitted Evidence, including Declarations, has been ignored again.

51. The Evidence includes Applicant's open demonstrations at MIT to which the Examiner was invited but did not come (\*\*). Specifically, Applicant gave a demonstration of the Applicant's [now Appellant's] invention, openly to the public, at the Massachusetts Institute of Technology [Cambridge, MA]. The public display at MIT was for a week before hundreds of people, reported worldwide with affidavits submitted as Exhibits to the Board. Observations of the Applicant's invention have been reported on in countries such as America, France, Japan, and China from where scientific witnesses came.

(\*\*\*) Attention is directed to two simple facts. Dr. Palabrica and the Patent Office's counsel were personally invited to attend the MIT ICCF10 meeting and demonstration, but chose not to, for reasons unclear. They were both also personally invited (along with the Commissioner) to attend the meeting and demonstration at MIT in 2003 and to the International Conferences in Washington DC in 2008, but chose NOT to attend. The DC meeting conveniently (and expensively) took place next to the US Capitol to facilitate the Examiner Palabrica's schedule.

## 52. Fusione fredda: successo per un test effettuato al MIT

URL

<http://www.greenstyle.it/fusione-fredda-successo-per-un-test-effettuato-al-mit-7376.html>

2 febbraio 2012 - Guido Grassadonio

**"La storia della fusione fredda si incrocia molto spesso con quella del prestigioso istituto di ricerca statunitense del MIT. Quando nel 1989 Martin Fleischmann e Stanley Pons annunciarono al mondo intero che erano riusciti a ottenere tale reazione nucleare, il dibattito che ne scaturì e che si concluse con la bocciatura senza appello di questa invenzione, passò anche dai risultati negativi di alcuni test svolti proprio al Massachusetts Institute of Technology.**

**Come leggiamo su Wikipedia, solo successivamente Eugene Mallove, allora capo dell'ufficio stampa dell'istituto, ammise che alcuni grafici afferenti a quei test furono alterati senza ragione, probabilmente per evitare che lo studio delle reazioni LENR rubasse scena e fondi alle ricerche sul nucleare classico.**

**Il fatto che in questi giorni si parli della riuscita di una prova riuscita proprio al MIT su un reattore a fusione fredda potrebbe essere archiviato sotto la voce "legge del contrappasso". Il reattore in questione non è, per essere chiari, né quello del duo Fleischmann-Pons (di cui però replica la reazione), né tanto meno l'E-Cat di Andrea Rossi e Sergio Focardi – anche se è difficile non avvertire la presenza del fantasma di entrambi in questa vicenda.**

Ad essere stato testato è stato il reattore che da anni stanno mettendo a punto quelli della JET Energy, chiamato: Lattice-Assisted Nuclear Reaction (LANR). Il nome deriva dal fatto che sarebbe proprio un particolare lattice costruito a partire da nanotecnologie a indurre la reazione nucleare a basse temperature. A reagire, sono due atomi di idrogeno (Deuterio e Trizio) che si fondono in un isotopo stabile dell'Elio. Si tratta, come detto, della stessa reazione scoperta da Fleischmann-Pons; diversamente, l'E-Cat di Andrea Rossi catalizzerebbe una reazione a bassa energia fra idrogeno e nichel, ottenendo del rame.

L'energia prodotta dal reattore al MIT sarebbe 10 volte superiore a quella immessa per attivarlo. Inoltre, diversamente rispetto al caso di Rossi, il prof. Hagelstein avrebbe fornito delle basi scientifiche in grado di spiegare l'accaduto.

Ad essere onesti, non si tratta del primo esperimento della JET Energy al MIT: già ad agosto del 2003, quindi quasi nove anni fa, ne venne effettuato uno con successo. Il successo mediatico che il tema sta avendo ai nostri giorni, grazie ad attori come Andrea Rossi o la Defkalion, rende però l'avvenimento estremamente interessante. Che la fusione fredda sia una possibilità reale per il nostro futuro? Come nel caso del motore PlasmERG è presto per rispondere. Di certo la nostra società ha un disperato bisogno di nuove fonti energetiche e sembra aggrapparsi a queste ricerche per vedere un po' di luce per il proprio futuro."

[Guido Grassadonio, "Fusione fredda: successo per un test effettuato al MIT", <http://www.greenstyle.it/fusione-fredda-successo-per-un-test-effettuato-al-mit-7376.html>, 2 febbraio 2012]

53. Cold Fusion is Here, It's Real, and its Time has Come -

URL = <http://www.opednews.com/populum/page.php?f=Cold-Fusion-is-Here-It-s-by-steve-windisch-120202-446.html#startcomments>

Steve Windisch 2-2012

"Over the last several years, there have been many reports around the world about important multiple successes with what is popularly known as "Cold Fusion", or more properly what is now known as "Low-Energy Nuclear Reactions" (LENR). The latest was from January 31, 2012 at M.I.T. in Cambridge, Massachusetts. Professors Peter L. Hagelstein and Mitchell Swartz gave a symposium and short class where a successful 2-day LANL / LENR / Cold Fusion experiment was done publicly that produced at least 10 times the energy out, than was used.

This event was especially significant, since it was some professors and administration officials at M.I.T. who were leading the anti-cold fusion attack wave in the early 1990's. Pro-CF proponents, such as the late Dr. Eugene Mallove of Harvard and M.I.T. who wrote books and articles on LENR before

his murder in 2004, have theorized that the vehement attacks, derision, and accusations publicly made about it then were at least partially about M.I.T. and others trying to protect the large amount of government funding they received for "hot fusion" research; which would soon become utterly obsolete if cold fusion were a reality. LENR research is dozens of times less expensive to perform than hot fusion research, and much less ongoing funding is needed to maintain a laboratory. No one knows for sure the real reasons CF was completely discarded and discredited in the U.S. in the early 1990's; and certainly many skeptics there and other places were genuine in their condemnations, since many labs attempted "honest" replications and failed to get any positive results (but others during that time did in fact get good results). At any rate, events have proven that the early Pons and Fleischmann experiments were indeed correct and worthy of much greater study and investment, and the most prestigious scientific institute of all, M.I.T., has now seen a successful public demonstration and verification over 20 years later."

[Steve Windisch, "Cold Fusion is Here, It's Real, and its Time has Come", <http://www.opednews.com/populum/page.php?f=Cold-Fusion-is-Here-It-s-by-steve-windisch-120202-446.html#startcomments>, 2-2012]

54. [nickelpower](http://nickelpower.org) URL = <http://nickelpower.org/2012/02/01/cop-greater-than-10-demonstrated-at-mit/>

"As part of the IAP Course on COLD FUSION at the Massachusetts Institute of Technology, Dr. Mitchell Swartz, JET Energy, and Prof. Peter Hagelstein demonstrated a significant energy gain greater than 10! (<http://world.std.com/~mica/cft.html>) Now we have 3 dogs in the race. There are now three separate organizations that are generating useful COP from LENR. 2012 is the year that LENR denial will crumble!"

[nickelpower, <http://nickelpower.org/2012/02/01/cop-greater-than-10-demonstrated-at-mit/>]

55. New Energy and Fuel URL = <http://newenergyandfuel.com/http://newenergyandfuel.com/2012/02/09/now-a-little-controversy-involving-cold-fusion/>

News and Views for Making and Saving Money in New Energy and Fuel

"Now a Little Controversy Involving Cold Fusion"

February 9, 2012 - "It's enough to make one smile with the silliness of the thing. As noted here last week Electrical Engineering Prof. Peter Hagelstein at the Massachusetts Institute of Technology (MIT) taught an Independent Activities Period course titled "Cold Fusion 101: Introduction to Excess Power in Fleischmann-Pons Experiments". Dr. Mitchell Swartz, of JET Energy and

Prof. Hagelstein demonstrated cold fusion openly for the attending scientists and engineers. So far so good. These kinds of things make news and much to your humble writers surprise, the information kept coming out and got – confused, by relatively competent people. The smile is from the fact the controversy is in reading somewhat difficult graphs instead of whether the cold fusion is working. The oddest thing is after the huge MIT public relations effort to discredit Fleischmann-Pons years ago, there seems to be a working apparatus on campus. OH! Horrors. Or – its about bloody time . . . An apology seems to be in order, but that level of character and honor is likely out of such an institution's reach....

The little incident has been a bit of a joy as more information has become available to see just to what point the Swartz Hagelstein duo has progressed. The Swartz Hagelstein device seems to work, too. OK, its not a huge output or anything amazingly ground breaking, yet its enough output to be net and documented well enough to provoke some important theoretical thought. Dr. Swartz is highly competent, published, and participates in the worldwide network of cold fusion research. This gentleman is nearly the ideal of skeptics' term for credence. .... Cold Fusion or Low Energy Nuclear Reactions (LENR) or Lattice Assisted Nuclear Reactions (LANR) labels matter not. The technology is getting on its feet and is the opening big story for the 21st Century. Your humble writer believes that "Cold Fusion" will do – if only to show history that a cabal of poor quality and low character scientists set back progress by over two decades. We can say Cold Fusion is alive and growing. Smile eight."

[New Energy and Fuel, News and Views for Making and Saving Money in New Energy and Fuel, <http://newenergyandfuel.com/http://newenergyandfuel.com/2012/02/09/now-a-little-controversy-involving-cold-fusion/>, February 9, 2012]

56. Cold Fusion Has a Good Week

URL

<http://newenergyandfuel.com/http://newenergyandfuel.com/2012/02/02/cold-fusion-has-a-good-week/>

February 2, 2012

"Last week at the Massachusetts Institute of Technology (MIT), Electrical Engineering Prof. Peter Hagelstein taught an Independent Activities Period course titled "Cold Fusion 101: Introduction to Excess Power in Fleischmann-Pons Experiments." For many, the news that an MIT professor holding a cold fusion class at MIT is astonishing because decades ago former MIT people went to extreme lengths to discredit cold fusion and denigrate the careers of interested researchers. Times have changed. The capstone of the class was when Dr. Mitchell Swartz, of JET Energy presented experimental results showing excess power in Palladium/Deuterium and Nickel/Hydrogen systems, with a particular focus on experiments he himself has conducted.

The news reported is Dr. Swartz and Prof. Hagelstein demonstrated cold fusion openly for the attending scientists and engineers. Using the Jet Energy NANOR device they demonstrated a significant energy gain, greater than 10, much larger than the previous open demonstration back in 2003 with a 2.3 yield. The demonstration was for the class, meaning no attempt was made to assuage skeptics. .... It seems that after 5 (about 2 hour classes each day) days of Prof. Hagelstein sharing his breakthrough explanatory theory, the demonstration had the desired effect. Perhaps the class will encourage the participants to continue their research and more improvement can come over time."

[Cold Fusion Has a Good Week;  
<http://newenergyandfuel.com/http://newenergyandfuel.com/2012/02/02/cold-fusion-has-a-good-week/>, February 2, 2012]

#### 57. nickelpower

URL = <http://nickelpower.org/2011/12/30/replicators-as-if-december-30-2011/>  
 Replicators (as of February 2, 2012)

Below is an annotated and linked list of reports of 16 people who have achieved a Ni + H reaction: ....

**Dr. Brian Ahern, Ames National Laboratory** - While it is not clear that Ahern is using nickel, it is clear that he is using light hydrogen. It is also clear that he sees it as a replication of Rossi. He says, "This 5 watt excess is very much less than Rossi, but it is a real and repeatable experiment There was no radiation above the background level."

<http://www.mail-archive.com/vortex-l@eskimo.com/msg47437.html> ....

**James Patterson, 1920 – 2008, A "chemist"** - Invented his "power cell" which is reported to produce 200 times energy gain. In June 11, 1997 he demonstrated his technology on Good Morning America. The scientific community, obviously, mostly ignored him. He tried to produce a commercial product, but apparently had difficulty mass producing the intricate "beads" that he used in his reaction. [http://en.wikipedia.org/wiki/Patterson\\_Power\\_Cell](http://en.wikipedia.org/wiki/Patterson_Power_Cell) ....

**George Miley, Department of Nuclear, Plasma, and Radiological Engineering, University of Illinois** - Began with Patterson's technique. Reports excess heat, and transmutations.

<http://www.mail-archive.com/vortex-l@eskimo.com/msg53212.html>

**Piantelli, University of Siena, Italy.** - The Piantelli group filed an Italian patent application, "Method for Producing Energy and Apparatus Therefor", on November 24, 2008. Piantelli's technology uses a nickel bar which is etched to increase its surface area. He reports 2 – 3 times energy gains. Piantelli's work with LENR goes back two decades and includes two dozen scientific publications and conference presentations.

(<http://blog.newenergytimes.com/2011/09/28/nasa-advances-evaluation-of-piantelli%E2%80%99s-lenr-research/>) ....

Francesco Celani, National Institute of Nuclear Physics (Italy's equivalent of Los Alamos) - He has announced success in producing the Ni + H reaction, and obtaining 200% (2x) excess thermal energy.  
<http://energycatalyzer3.com/news/top-italian-scientist-claims-to-have-achieved-nickel-hydrogen-cold-fusion...>

Dr. Eugene Mallove and Dr. Mitchell Swartz, Jet Energy, Inc. Guest lecturers at MIT <http://world.std.com/~mica/jet.html>

The MIT "Independent Activities Period" syllabus states: On 1/30 and 1/31 M. Swartz will discuss results he has obtained from a variety of cold fusion experiments he has done over the years. He has observed excess power in PdD and in NiH experiments; typical energy gains in the range of 2-3 are seen, with a few experiments giving higher energy gain; he has carried out a demonstration of his experiment previously at MIT; and energy produced from cold fusion reactions has been used to drive a Stirling engine.

<http://student.mit.edu/iap/nc9.html> Demonstrated COP of 10 at MIT:  
<http://world.std.com/~mica/cft.html>

So as of January 12, 2011, we have 14 independent sources who have produced excess energy from the Ni + H reaction. Many of these are well respected scientific organizations. All of them come with supporting links."

[nickelpower, Replicators (as of February 2, 2012),  
<http://nickelpower.org/2011/12/30/replicators-as-if-december-30-2011/>]

58. Note that Prof Hagelstein (MIT) supports his previous statements, and also states

"The scientific results presented by Dr. Mitchell Swartz on his Phusor experiments, in which excess power and total energy is measured, looks very good. His results are competitive in terms of reproducibility and power gain with the best results obtained by other groups around the world. The reproducible energy gains that he has reported are the highest so far reported by any group."

"Dr. Mitchell Swartz's Fleischmann/Pons-type electrolytic palladium Phusor/low electrolyte conductance heavy water/platinum cell performed flawlessly in Prof. Hagelstein's lab at MIT during ICCF10. Its excess power ranged from 167% to 267% as Dr. Swartz altered the experimental conditions."

[Dr. Eugene Mallove, Infinite Energy Magazine 9/2003]



"Greetings. I am back from ICCF-10 ... Swartz, and Dash et al., live demonstrations at MIT. Marvelous work! Bravo to everyone! McKubre said he would never have the guts to try this, because so much can go wrong when you move an experiment."

[Jed Rothwell, Subject: Impressions of ICCF-10, 3 Sep 2003]

"Three excess heat experiments were shown in live demonstrations at ICCF10, including two on August 26, in a laboratory at MIT that was open to the public: A cell in a precision calorimeter was shown by Mitchell Swartz and Gayle Verner at MIT."

[<http://lenr-canr.org/iccf10/iccf10.htm>]

59. And yet as another example:

"La dixième conférence internationale sur la fusion froide ICCF10 s'est tenue à Boston aux Etats-Unis, du 24 au 29 août 2003. 120 personnes de 15 nationalités différentes y ont participé. Elle était organisée par le Professeur Peter Hagelstein, du MIT. ... "Deux démonstrations de fusion froide ont été présentées : l'une par le professeur John Dash de l'université de l'Oregon à Portland, et l'autre par le Dr Mitchell Swartz. Les deux expériences ont démontré la production d'excès de chaleur. ... M. Swartz a obtenu de forts excès de chaleur, jusqu'à 300% avec de l'eau lourde ultra pure de résistivité 220 k $\Omega$ , sans rajout d'électrolyte, avec cathode de palladium hélicoïdale."

[Rapport sur L'International Conference on Cold Fusion ICCF10]

These public demonstrations are important because they constitute additional significant and reputable evidence of record to support that the system in which the present invention DOES operate in fact exists (despite the Examiner's truly-endless, unsupported, notion).

### **Undisputed Fact: Declarations Confirm Compliance with §112 First Paragraph**

60. Following receipt of Applicant's Communication to the Examiner dated 12/2/2011, (which provided Evidence in the form of Declarations and publications that rebut the Office) the Office personnel, i.e. the Examiner, should have reviewed the original disclosure, any evidence relied upon in establishing the *prima facie* showing, any claim amendments, and any new reasoning or evidence provided by the applicant in support of an asserted specific and substantial credible utility/operability. Simply put, per *In re Oetiker*, the Examiner was required to have a responsive argument. This will be documented below in considerable detail.

Instead of being properly responsive, or lawful, the Examiner has not responded to the Applicant's Declarations. They have been ignored by the Examiner showing an appearance of impropriety and violation of Law.

61. Applicant's Declarations show precisely that the Examiner is inaccurate on issues of operability, refute all of his points of rejection, and substantially, completely and fully address and precisely dispute all of the Examiner's points of rejection and all matters criticized by the Office. They also prove the Office's hostile and discriminatory notions are wrong in this matter. The Declarations document Applicant's demonstrations of the Applicant's invention, including one open to the public, at the Massachusetts Institute of Technology [Cambridge, MA] for a week before hundreds of people. The Declarations thus support that the invention DOES operate as indicated. They prove that the specification adequately described the subject matter recited in the claims and demonstrate that it operates as stated. The Declarations prove that the adequately written description requirement is met and demonstrate that the teachings of this invention are sufficient for one skilled-in-the-art to have understood the inventor to have been in possession of the claimed invention at the time of filing.

62. The Applicant's submitted Declarations are MORE than sufficient [In re Brana, 51 F.3d at 1566, 34 USPQ2d at 1441] to meet the "burden shift ... to provide rebuttal evidence sufficient to convince such a person of the invention's asserted utility". The Declarations demonstrate validation, operability, considerable utility, and therefore enablement of the present invention and Applicant's claimed subject matter. They indicate that the teachings in the original specification, claims, and drawings are sufficient and convincing to one of ordinary skill in the art -- heralding operability and conformity and compliance with the 35 U.S.C. §112, §1 (first paragraph) and the "enablement" requirement.

Validation occurs when scientists skilled in the state of the art states it is so. These Declarations indicate that the measurement of activity has utility, and the precise invention has operability.

63. **NOTA BENE:** The Office, and Dr. Ricardo Palabrica, has corruptly ignored the testimony in broad array of Appellant's invention in the past (showing that they are not partial but are discriminatory, and cruel) allowing several Declarants to die without their words having even been fairly read. For example, as the late Dr. Eugene F. Mallove has said:

**"The activity of a sample is an important issue and its measurement has great utility. ... in measuring both endothermic and exothermic chemical and chemical-like reactions, ... The invention does not require the reproducibility of cold fusion phenomena, such as excess heat, to be secure, ....**

**"... Rothwell actually praises (the present invention) ... when he says, "This could be a superb research tool..."**

**" [Declaration of Dr. Eugene F. Mallove (8/2001)]**

64. As the late Dr. Scott R. Chubb has said:

**"the patent office (PTO) has ignored the facts involving the present invention, ... The patent application provides a well-defined procedure, understandable by anyone skilled in the art, that can be used to implement the invention. ... It is evident that the patent office has become recalcitrant, with its opinion in contradiction to existing evidence as promulgated through peer-reviewed literature."**

**"Dr. Swartz has invented an important, new device, whose purpose has value for measuring activity of a sample. ... I assert that the PTO has failed to distinguish between the very different sets of claims associated with measurements of high energy particles and those involving excess heat."**  
**[Declaration of Dr. Scott R. Chubb (8/2001)]**

65. Corroborating the above, Dr. Hal Fox has said:

**"It is my professional judgment that the method of measuring the activity of sample in the above-entitled action is clever, not obvious, and is an important invention with utility. ... The rejection has ignored numerous filings delivered to the Patent Office by Dr. Swartz and others. ... It is not credible that hundreds of scientists and inventors are all mistaken in their experiments and data, or that only the patent examiners are sufficiently educated to point out the faults of these inventions."** **[Declaration of Dr. Hal Fox (8/2001)]**

66. The Office's own witness in '457, Dr. Michael Schaffer (cited in the Exhibit supplied with the rejection) rebutted the USPTO and said:

**"I do not see how anyone could construe anything that I wrote at Scientific American's site to imply that there is "no utility" in cold fusion, much less in instruments that might be used in cold fusion and other scientific experiments."**

**"It appears that the Board of Patent Appeals considers me an expert on this subject. As an expert ... I would agree [Dr. Swartz's invention] ... does have utility." [Letter of Michael J. Schaffer (8/7/2001)]**

67. The Office's witness, Jed Rothwell (cited in the '457 rejection out of context as has been typical for the US PTO) rebutted the USPTO and said:

**"None of my statements referred to the functionality, operability or performance of Dr. Swartz's multiring calorimeter. Nothing I have published or heard from scientists casts doubt on the claimed capabilities of Dr. Swartz's invention. In fact, at the Conference reviewed in the article, I interviewed many people and some scientists, such as Dr. Michael McKubre, were enthusiastic about Dr. Swartz's device. Therefore I stated that it may well be a "superb research tool" in the article quoted. It is apparent that the judges of the rejection have standards that are ludicrous and unscientific." [Declaration of Jed Rothwell (8/2001)]**

68. In the international community, Dr. McKubre is among the most highly regarded of those skilled in the art. Dr. McKubre stated:

**"For me ... perhaps the best report at this conference, was that of Mitch Swartz. ... I have always felt that the quality of the calorimetric observations in the nickel light water studies has been less than the quality of the calorimetric observations in the palladium-deuterium system. ... Mitch Swartz presented a very clear piece of calorimetric evidence which is certainly going to cause me to reconsider my belief and understanding of the nickel-light water system and its capacity to produce anomalous heat" [Dr. Michael McKubre, SRI, at his closing "Summary During ICCF-7", Infinite Energy, 4, 20, pp. 34-35, (1998)]**

69. As the Prof. Hagelstein's (MIT, Cambridge) Declaration states,

**"The scientific results presented by Dr. Mitchell Swartz on his Phusor experiments, in which excess power and total energy is measured, looks very good. His results are competitive in terms of reproducibility and power gain with the best results obtained by other groups around the world. The reproducible energy gains that he has reported are the highest so far reported by any group."**

**"Water heaters that run on electricity from household wall plugs are currently sold to produce hot water in parts of the country where oil delivery and natural gas delivery are unavailable or inconvenient. Electricity in the Boston area costs near \$0.20/kW-hr, which seems very expensive. Swartz's Phusor experiments have shown energy gains at least up to 10x. A Phusor-based water heater with an energy gain of 10x would be competitive with existing water heaters. I would buy one if available."**

70. As the Prof. Hagelstein's (MIT, Cambridge) Declaration states,

**"No one in the field considers Swartz's Phusor experiment to be the same as what Fleischmann and Pons did, or what others have done. It is clearly an original experiment distinct from all that have come before. The USPTO is simply mistaken if they assert otherwise. The specification of "low paramagnetic, low conductivity deuterium oxide, 99.99%, from Cambridge Isotope Laboratories, Andover MA" adequately specifies what is meant by pure heavy water in the context of Swartz's Phusor experiment. Assertions to the contrary in this case by the USPTO are incorrect."**

71. As the Prof. Hagelstein's (MIT, Cambridge) Declaration states,

**"Swartz demonstrated his Phusor experiment at MIT in connection with ICCF10 in August 2003. Data from this experiment show significant excess heat. Swartz has demonstrated his Phusor experiment in his Weston laboratory, in Weston, MA numerous times for me and for others."**

72. As the Dr. Brian Ahern (ret. Air Force, MIT) Declaration states,

**"I have known Mitchell Swartz since 1991. I would like to express my strong support for the work being conducted by Dr. Mitchell Swartz in the field of isotopic fuel loading of metal lattices and lattice assisted nuclear reactions. I believe his investigations are some of the most thorough and precise yet conducted in isotopic loading and lattice assisted nuclear reactions, and that the thermal effects he is observing are real and will ultimately be useful on a large scale."**

73. Attention is directed to the fact that the Applicant has presented at ICCF-10 [Cambridge, MA; to which the Examiner and the Office's counsel were invited (through said counsel), but did not attend] other technologies in this field, including an open demonstration for a week. This was published around the world (all documents fastidiously removed at the USPTO).

**"Dr. Mitchell Swartz's Fleischmann/Pons-type electrolytic palladium Phusor/low electrolyte conductance heavy water/platinum cell performed flawlessly in Prof. Hagelstein's lab at MIT during ICCF10. Its excess power ranged from 167% to 267% as Dr. Swartz altered the experimental conditions."**

[Dr. Eugene Mallove, Infinite Energy Magazine 9/2003]

**"Greetings. I am back from ICCF-10 ... Swartz, and Dash et al., live demonstrations at MIT. Marvelous work! Bravo to everyone! McKubre said he would never have the guts to try this, because so much can go wrong when you move an experiment."**

[Jed Rothwell, Subject: Impressions of ICCF-10, 3-Sep 2003]

**"Three excess heat experiments were shown in live demonstrations at ICCF10, including two on August 26, in a laboratory at MIT that was open to the public: A cell in a precision calorimeter was shown by Mitchell Swartz and Gayle Verner at MIT:"**

[<http://lenr-canr.org/iccf10/iccf10.htm>]

And yet as another example:

**"La dixième conférence internationale sur la fusion froide ICCF10 s'est tenue à Boston aux Etats-Unis, du 24 au 29 août 2003. 120 personnes de 15 nationalités différentes y ont participé. Elle était organisée par le Professeur Peter Hagelstein, du MIT. ... "Deux démonstrations de fusion froide ont été présentées : l'une par le professeur John Dash de l'université de l'Oregon à Portland, et l'autre par le Dr Mitchell Swartz. Les deux expériences ont démontré la production d'excès de chaleur. ... M. Swartz a obtenu de forts excès de chaleur, jusqu'à 300% avec de l'eau lourde ultra pure de résistivité 220 k?, sans rajout d'électrolyte, avec cathode de palladium hélicoïdale. "**

[Rapport sur L'International Conference on Cold Fusion ICCF10].

74. As the *Amicus Curiae* Brief of Eugene F. Mallove, Sc.D (Editor, New Energy Research Laboratory, NH) has stated,

**"The most notable characteristic of the attack against the Swartz patent application at hand is its stale fixation with misrepresented events of 1989, its citation of erroneous reports, and its continued argument from supposed authority, rather than from evolved science and meticulous experiment."**

As the Prof. Hagelstein's (MIT, Cambridge) Declaration states,

**"Today, D/Pd loading is known to be very important. There have been numerous peer-reviewed published papers that show positive excess heat results in replications of the Fleischmann-Pons experiment. If the USPTO have asserted otherwise, they are simply mistaken."**

75. Why has the Examiner been so serially untruthful here? --- and not replied to any of the Applicant's previous comments regarding these very same issues involving "Declarations"?

Because the above-entitled invention has operability, as do the systems about which it is involved. This is confirmed by un rebutted, important Declarations and Amicus Briefs which the Applicant has submitted and referenced.

The Declarations contain factual statements which detail rebuttals to the Office and support the Applicant's position.

The Declarations constitute significant reputable evidence of record and a *bona fide* case which is quite convincing and persuasive to one who is open-minded and not biased.

## LAW

76. Proof of operability and utility are sufficient if convincing to one of ordinary skill in the art [In re Irons, 52 CCPA 938, 340 F.2d 974, 144 USPQ 351 (1965)], the Declarations of so many. Said Declarations were received by the Office and have been systematically ignored. Said Declarations fully addressed all matters criticized by the Office regarding operability and utility, substantially and fully. Several Affiants even described the week-long open demonstrations of Applicant's technology at the Massachusetts Institute of Technology in the Electrical Engineering building in August 2003 during ICCF-10. They confirmed the above-entitled invention's operability, definiteness and utility consistent with requirements [In re Gazave, 379 F.2d 973, 978, 154 USPQ 92, 96 (CCPA 1967); In re Chilowsky, 229 F.2d 457, 462, 108 USPQ 321, 325 (CCPA 1956); In Re Jolles, 628 F.2d 1322, 206 USPQ 885 (CCPA 1980).

77. Said Declarations remain ignored in their factual content because they refuted the Offices' erroneous position. Said Declarations proved that the present claimed invention measures activity and meets at least one stated objective, and therefore utility under 101 is clearly shown [Standard Oil Co. (Indiana) v. Montedison, S.P.A., 664 F.2d 356, 375, 212 USPQ 327, 344 (3rd Cir. 1981), cert. denied, 456 U.S. 915, 102 S.Ct. 1769, 72 L.Ed.2d 174 (1982); E.I. du Pont de Nemours & Co. v. Berkley & Co., 620 F.2d 1247, 1258 n. 10, 1260 n. 17, 205 USPQ 1, 8 n. 10, 10 n. 17 (8th Cir. 1980); Krantz and Croix v. Olin, 148 USPQ 659, 661-62 (CCPA 1966); Chisum on Patents, 4.04[4] [1983]; RAYTHEON COMPANY v. ROPER CORPORATION, U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592].

**Undisputed Fact: 'One Declarant Being Sufficient' is Ignored and Opinion**

78. Exactly how many Declarants does it take to overcome the Examiner's unsubstantiated rejection? The answer is simple. The answer is quantitative. The answer is one (1). Operability and Utility are fact questions. Proof of utility is sufficient if it meets at least one stated objective. In this case, it does. In this case, given the averments of so many Declarants, utility under USC 101 is clearly shown. The Examiner has ignored that the patent application has met at least one (1) stated objective [Standard Oil Co. (Indiana) v. Montedison, S.P.A., 664 F.2d 356, 375, 212 USPQ 327, 344 (3rd Cir. 1981), cert. denied, 456 U.S. 915, 102 S.Ct. 1769, 72 L.Ed.2d 174 (1982); E.I. du Pont de Nemours & Co. v. Berkley & Co., 620 F.2d 1247, 1258 n.10, 1260 n.17, 205 USPQ 1, 8n10, 10n.17 (8th Cir. 1980); Krantz and Croix v. Olin, 148 USPQ 659, 661-62 (CCPA 1966); Chisum on Patents, 4.04[4] [1983]; RAYTHEON COMPANY v. ROPER CORPORATION, U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592].

**Undisputed Fact: Declarant's Statements Wrongly Called 'Opinion'**

79. The Examiner cannot dismiss Declarations improperly to "opinion"-status without an adequate explanation of how the Declarations failed to overcome the *prima facie* case initially established by the Examiner. The Examiner's error becomes further unlawful because the Examiner has also rejected *In re Alton* which requires that even the use of the words "it is my opinion" to preface what someone of ordinary skill in the art knows does not transform the factual statements contained in the declaration into opinion testimony.



Several of the Office's "witnesses" have thereafter taken the time to write *Amicus Curiae* Briefs and letters to the effect that the Examiner has absolutely misstated what they wrote or implied. Other Declarants have stated that the Office is wrong. All have been impugned, ignored, or relegated improperly to 'opinion' and the wastebasket.

### **Undisputed Fact: Examiner Relies on Cloth Cut of Other Art**

#### **THE TRUTH: The Examiner, Yet Again, Totally Relies on Cloth cut of Other Art**

80. Despite the Examiner's claims, much documentary Evidence has been presented (and removed by the corrupt, so far Board-approved actions of Dr. Palabrica) and as importantly, the present invention is NOT the work of Pons or Fleischmann (or any of the Office's other cited art). This deliberate misdescription by the Office is absolutely wrong because the standards of review require that all Decisions be based upon the invention which measures heat release and the activity of a sample. Today, THIS invention is NOT discussed by the Examiner, who only uses his broad "F+P"-attack-brush.

Attention of the Court and Congressional review are directed to the fact that even now --23+ years after FP, the Office still, always drifts toward criticism of "FP". The present invention is NOT the work of Pons or Fleischmann despite the Examiner's innuendo.

81. It is an uncontested fact that the ONLY claimed invention should be the focus of the Office review. Enablement must be judged on this invention's original specification and claims. However, in this case, to harass the Applicant and deny his civil and Constitutionally-protected rights, and deviating from the normal standards of review, the Examiner and the Office have misread the invention as he, Dr. Ricardo Palabrica and his supervisors in that Art have done before. This will be shown with multiple examples.

**Undisputed Fact: Examiner Relies Upon Fraud, Deception, Evidence Destruction to Maintain his Falsehoods Regarding Lattice Assisted Nuclear Reactions (i.e. Cold Fusion)**

82. The Examiner is absolutely inaccurate, unfair, and disingenuous. These statements by the Examiner demeaning a field are not true. The Examiner and his supervisor know this. DTRA disagrees with the Examiner. DARPA disagrees with the Examiner. The US Navy disagrees with the Examiner. The Examiner and his supervisor know this.

The subject of cold fusion (LANR, LENR, CMNS, by whatever acronym for lattice assisted nuclear fusion) has drawn a reaction historically similar to treating baldness which was once considered by the Office to also to be an inherently unbelievable undertaking. See *In re Ferens*, 417 F.2d 1072, 1074, 163 USPQ 609, 611 (CCPA 1969); *In re Oberwener*, 115 F.2d 826, 829, 47 USPQ 455, 458 (CCPA 1940). Since then, treatments for baldness have gained acceptance with minoxidil and other materials now recognized as effective in treating baldness. The Office must eventually admit that, as in baldness control, the field discussed by the Office where the present invention can be used, does exist. Furthermore, corroborating that fact, the PTO has granted patents in this field, just as they are granted around the world. The continued discrimination against the Applicant is egregious.

83. Prof. Hagelstein addressed this matter in the *pro se* Applicant submitted Declarations which were discussed at length in the Remarks ignored by the Evidence-destroying Examiner. This was proven before DTRA, and not surprisingly the Examiner has now admitted he removed that Evidence, too.

As the Hagelstein Declaration states,

**"I note that it becomes exponentially more difficult to achieve high D/Pd load-ings above a loading of 0.70 near room temperature (due to the rapid increase in deuterium chemical potential). Hence, the achievement of a loading of 0.95 in the majority of replication experiments in 1989 and 1990, where no special effort was made to achieve high loading, and where the loading was not even measured in most of these experiments cited by the USPTO, would not be expected. The existence of such a requirement was not appreciated in 1989, except by Fleischmann, Pons, and a small number of other researchers."**

**"The USPTO continues the tradition of assigning significance to these negative experiments, which were not done in the relevant parameter regime of high D/Pd loading. Thus, rather than showing that the Fleischmann-Pons experiment could not be replicated, these insufficiently loaded experiments should be understood as producing the expected negative result (no excess power) in those regimes where we would expect no excess power to be seen."**

84. The Examiner is inaccurate regarding the DOE review. First, the evidence (papers and Declarations) demonstrate the existence of lattice assisted nuclear reactions (LANR, also called LENR, cold fusion, and CMNS) and their products (such as helium-4). The problem for the Office is that their previous citations now support LANR. The two decades of positive results, the Declarations, and the peer-reviewed published literature have much more evidentiary value than the few "negative" less credible -- recycled and older -- reports cited by the Examiner about art cut of different cloth than the present invention. Therefore, the subject matter sought to be patented as defined by all pending claims have operability, and resides in a field which does exist and has utility. As the Hagelstein Declaration states,

**"Today, D/Pd loading is known to be very important. There have been numerous peer-reviewed published papers that show positive excess heat results in replications of the Fleischmann-Pons experiment. If the USPTO have asserted otherwise, they are simply mistaken."**

85. Second, the Office misstates what the DOE reported - and the Applicant was not there, was asked for, would have liked to have been there, and had just demonstrated his demonstration unit openly at MIT for a week a few months before.

The second DOE panel has confirmed cold fusion. In summary,

**".....eighteen anonymous DOE reviewers "split approximately evenly" on whether or not there is excess power observed in the cold fusion phenomena. That is a great change since the 1989 ERAB report.**

**.... more than 3000 scientific papers and hundreds of researchers have expanded the field enormously. Second, in the USA most researchers are self-funded. ...**

**"Just the fact of the review has heightened the level of discussion. There's been a huge upswing in interest in funding cold fusion research." Adds MIT theorist Peter Hagelstein, "A door has been opened by the reviewers."**

[Cold Fusion Times volume 12, number 2] From DOE report itself:

**"DOE Conclusions: Reviewers identified two areas where additional research could address specific issues. One is the investigation of the properties of deuterated metals including possible effects of alloying and dislocations. These studies should take advantage of the modern tools for material characterization. A second area of investigation is the use of state-of-the-art apparatus and techniques to search for fusion events in thin deuterated foils. The reviewers believed that this field would benefit from the peer-review processes associated with proposal submission to agencies and paper submission to archival journals."**

[Cold Fusion Times volume 12, number 2]

86. Third, more proof the Examiner is wrong, is from the second DOE report itself, which recommended MORE RESEARCH.

**"DOE's Office of Science released a report on December 1st that examined the results of roughly 15 years of experiments dealing with low-temperature nuclear reactions, commonly known as cold fusion. In 1989, researchers B. Stanley Pons and Martin Fleischman announced that a palladium electrochemical cell had generated heat from an unknown source, which they postulated was a low-temperature fusion reaction. Later that year, a review by DOE's Energy Research Advisory Board recommended against establishing DOE programs devoted to the science of cold fusion, but supported the funding of peer-reviewed experiments for further investigations. Since 1989, research programs in cold fusion have been supported by various universities, private industry, and government agencies in several countries. In late 2003, a team of researchers approached DOE and requested another review of the experimental results to date. Their report, submitted to DOE in July, found experimental evidence for a physical effect that produces heat, the production of helium 4 (the product of fusing two nuclei of deuterium, which is a hydrogen nucleus with an added neutron), and the emission of high-energy particles. DOE, in turn, solicited comments from nine scientists, then held a one-day review of the material with another nine scientists. Reviewing the evidence for the production of excess heat and fusion products, two-thirds of DOE's reviewers did not feel the evidence was conclusive. Most reviewers also indicated that the evidence did not conclusively demonstrate the occurrence of cold fusion. In the final analysis, the reviewers were inconclusive about cold fusion's existence, and they recommended specific avenues for new research to resolve the uncertainties in the previous research results."**

[Cold Fusion Times volume 12, number 2]

87. More proof the the Examiner is wrong is from Research Day from the US government:

**"More CF research needed DoE finds - Since the Department of Energy's last review of cold fusion 15 years ago, significant progress has been made in the sophistication of calorimeters—tools that measure the heat generated by a chemical reaction, change of state, or formation of a solution—yet a new review by the department says the evidence is still uncertain. In late 2003, DoE's Office of Science was asked by a group of scientists to revisit the scientific evidence for low energy nuclear reactions. In total, DoE received comments on cold fusion research from 18 individual scientist reviewers, and two-thirds of them did not feel the evidence was conclusive for low energy nuclear reactions, one found the evidence convincing, and the remainder indicated they were somewhat convinced. Specifically, several reviewers noted that poor experiment design, documentation, background control and other similar issues complicated the results presented. Cold fusion is defined as the theory that energy can be created by running electrical current through water. Above all, the scientists identified a need for further research in the field of low energy nuclear reactions. "The nearly unanimous opinion of the reviewers was that funding agencies should entertain individual, well-designed proposals for experiments that address specific scientific issues relevant to the question of whether or not there is anomalous energy production in Pd/D systems, or whether or not D-D fusion reactions occur at energies on the order of a few eV," the DoE report concludes. "These proposals should meet accepted scientific standards, and undergo the rigors of peer review." In terms of specific basic science research areas that need further elucidation, the reviewers identified material science aspects of deuterated metals using modern characterization techniques, and the study of particles reportedly emitted from deuterated foils using state-of-the-art apparatus and methods. "The reviewers believed that this field would benefit from the peer-review processes associated with proposal submission to agencies and paper submission to archival journals," DoE explains."**

[Research Day, reported in Cold Fusion Times volume 12, number 2]

It can be seen again that the Office is wrong. The reviewers identified a need for further research in the field of low energy nuclear reactions. The reviewers identified material science aspects of deuterated metals using modern characterization techniques, and the study of particles reportedly emitted from deuterated foils using state-of-the-art apparatus and methods. The reviewers believed that this field would benefit from the peer-review processes associated with proposal submission to agencies and paper submission to archival journals."

**Undisputed Fact: Previously, in all Applicant's Applications, the Office Has Previously Wrongly Relied on Cloth cut of Other Art**

88. The Office and Examiner have also been inaccurate in other of Applicant's inventions. The issue is that other peoples' work is not relevant to this specific invention. Instead of addressing the invention as it was actually taught in the original specification and claims, the Office has solely relied upon reference to art cut of a cloth other than the original specifications and the Claims. So, for two decades, no matter which of the Applicant's invention's in this field has been "examined", there has been essentially one, and only one, response from the USPTO. It is F+P.

The Applicant's process to maximize the result of a reaction, or reaction rate, or product output, as derived from a material achieved by driving said material by an electric power supply which is modulated to deliver an optimal time function waveform selected by analysis using input power? The USPTO says it is F+P.

The Applicant's cathode vibrator to measure loading? The USPTO says it is F+P.

The Applicant's generation of electricity? The USPTO says it is F+P.

The Applicant's system to assemble multiple LANR systems? The USPTO says it is F+P.

The Applicant's use of increasing temperature to trigger reactions? The USPTO says it is F+P.

The Applicant's optimal operating points? The USPTO says it is F+P.

The Applicant's system to increase tardive heat? The USPTO says it is F+P.

The Applicant's multiring calorimeter? The USPTO says it is F+P.

The Applicant's use of microwave radiation? The USPTO says it is F+P.

The Applicant's use of nickel metamaterials with ultrapure water? The USPTO says it is F+P.

No matter what the Applicant's invention, there is one response from the USPTO. The USPTO says it is F+P.

89. The Office's unsubstantiated claim that the invention lacks operability is always imagined by the Examiner based upon his excluding Applicant's submissions and replacing them solely with other peoples' work. Despite the serial disingenuity of the Office, the Applicant's original specification and Claims in each case taught the subject matter defined by each of the rejected claims, set forth the best mode contemplated with an adequately written description of how to operate the invention, so that an artisan or those skilled-in-the-art, could practice it without undue experimentation, and distinctly pointed out and claimed the subject matter which constitutes the invention. These teachings were precise, clear, and unambiguous to a person skilled in the art, and adequately presented so that an artisan could practice it without undue experimentation [cf. Declarations and *Amicus Curiae* Briefs].

## LAW

90. By ignoring the description of this patent and focusing on "F+P", the Examiner has ignored and rejected MPEP §2111.01. The Office's rule [M.P.E.P. §2111.01] requires that "the words of a claim ... must be read as they would be interpreted by those of ordinary skill in the art".

By ignoring the description of this patent and focusing on "F+P", the Examiner has ignored and rejected the reasoning of *In re Prater*, 415 F.2d 1393, 162 USPQ 541 (CCPA 1969)] which requires the Examiner to refer to the claimed invention as the focus of its Office communication; but he has not by drifting toward criticism of "FP" again while ignoring all the figures and all the data and all the information in the application. It is unfair for the PTO to repeatedly weave systematic misstatements into its imagined cloth cut of other art.

91. Further reapeing impropriety by the Examiner, no matter what the Applicant's invention in case after case, there is one response from the USPTO. The USPTO says it is F+P. That has made the discrimination by Dr. Palabrica quite easy. No further Evidence is needed beyond the discriminatory "yellow label" which the Examiner sews on the file folder.

By ignoring the description of this patent and focusing on "F+P", the Examiner has ignored and rejected the reasoning of *In re Hogan* [559 F.2d 595, 60S, 194 USPQ 527, 537 (CCPA 1977)] which discusses that enablement must be judged on the original specification and claims.

92. By ignoring the description of this patent and focusing on "F+P", the Examiner has ignored and rejected the reasoning of *In re Fouche* [439 F.2d 1237, 1243, 169 USPQ 429, 434, (CCPA 1971) and *In re Zletz* [893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989)] which state that an invention (in structure, operation and composition) is defined by the claims and the original specification.

93. By ignoring the description of this patent and focusing on "F+P", the Examiner has ignored and rejected the reasoning of *In re Morris* [also *Ex parte Porter*] because the interpretation of an issue of fact, like operability, must read on the original specification and claims and be predicated upon the Declarations to a conclusion consistent with what one who is skilled-in-the-art would reach.

94. By ignoring the description of this patent and focusing on "F+P", the Examiner has ignored and rejected the reasoning of *In re Zletz* [893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989)] because the specification clearly and explicitly stated the meaning of the terms in the claims.

95. By ignoring the description of this patent and focusing on "F+P", the Examiner has ignored and rejected the reasoning of *In re Prater*, 415 F.2d 1393, 162 USPQ 541 (CCPA 1969)] which requires the Examiner to refer to the claimed invention as the focus of its Office communication, but he has not by drifting toward criticism of "FP" again while ignoring all the figures and all the data and all the information in the application. It is unfair for the PTO to repeatedly weave systematic misstatements into its imagined cloth cut of other art.



96. By ignoring the description of this patent and focusing on "F+P", the Examiner has ignored and rejected the reasoning of *In re Hogan* [559 F.2d 595, 60S, 194 USPQ 527, 537 (CCPA 1977)] which discusses that enablement must be judged on the original specification and claims.

97. By ignoring the description of this patent and focusing on "F+P", the Examiner has ignored and rejected the reasoning of *In re Ziegler* [992 F.2d 1197, 1200, 26 USPQ2d 1600, 1603 (Fed. Cir. 1993)] because the notion that the written description fails to illuminate a credible operability can only be made, by not reading on the claims of this patent. However, it is below the standards of review to solely use cloth cut of other art because the invention (structure, operation and composition) is defined by the claims and the original specification. This leading away from the actual original specification and claims by the Office herald bias by the Office rather than proper application of the standards of review.

98. The Examiner's action are improper and unlawful, in violation of *Newman v. Quigg* [877 F.2d 1575, 1581, 11 USPQ2d 1340, 1345 (Fed. Cir. 1989)] because the Office derides the present invention with reference to cold fusion but, in fact, Claim 1 (and the other claims) is a method for a monitoring loading. Such (well-known) "boilerplate" attacks by the Office on the words "cold fusion" is well-known [confer Bass, Rotegard, and Mallove Declarations, and the Valone, Fox, and Mallove *Amicus Curiae* Briefs]. As the *Amicus Curiae* Brief of Eugene F. Mallove, Sc.D (Editor, New Energy Research Laboratory, NH) has stated,

**"The most notable characteristic of the attack against the Swartz patent application at hand is its stale fixation with misrepresented events of 1989, its citation of erroneous reports, and its continued argument from supposed authority, rather than from evolved science and meticulous experiment."**

In summary, the 35 U.S.C. § 112, ¶ 1 rejection is wrong because there is operability under, and compliance with, 35 U.S.C. 112, first paragraph. The specification provides an adequately written description of the invention and does adequately teach how to make and use the invention, thereby providing an enabling disclosure. The claims and specification do comply with the enablement requirement. The specification did contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to

enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and the Applicant set forth the best mode contemplated by the inventor of carrying out his invention. The specification does contain subject matter which was described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

### **Undisputed Fact: The Office's Systematic Reliance on Cloth Cut of Other Art Is Discrimination**

99. It is an uncontested fact that ONLY the claimed invention should be the focus of the Office review. Enablement must be judged on this invention's original specification and claims. In this case, to harass the Applicant and deny his civil and Constitutionally-protected rights, and deviating from the normal standards of review, the Examiner and the Office have misread the invention as he, Dr. Ricardo Palabrica and his supervisors in that Art have done before. This will be shown with multiple examples.

By perpetually invoking "F+P" and art cut of other cloth than the present invention, the Examiner and Office needlessly use a broad brush, apparently with tongue in cheek, to deliberately mislead away from the above-entitled invention. The present invention is NOT the work of Pons or Fleischmann, and so it is salient that this is done to confuse the issue, as the Examiner systematically deviates from the present invention and refers ONLY to other art, located far from the present invention.

Such handwaving to other much less relevant art is not a fair or proper rebuttal.

Such handwaving to other much less relevant art is a different matter cut of a cloth not even made from the original specification and claims.

NOTA BENE: Attention of the Court and Congressional review are directed to the fact that even now --23+ years after FP, the Office still, always drifts toward criticism of "FP". The present invention is NOT the work of Pons or Fleischmann despite the Examiner's innuendo.

**Undisputed Fact: Examiner's Reliance on Cloth Cut of Other Art  
Confirms Compliance with §112 First Paragraph**

100. Today, although '765 is, generally speaking, a two-stage method which involves a first stage of electrode loading, and then, a second stage of sudden rapid ("catastrophic") flow of hydrogen within the metal, the invention is NOT discussed by the Examiner with his broad "F+P-"brushstroke. Despite the Examiner's claims, the present invention is NOT the work of Pons or Fleischmann (or any of the Office's other cited art). This deliberate misdescription by the Office is absolutely wrong because the standards of review require that all Decisions be based upon the invention.

**Undisputed Fact: Reference to Art Cut of Cloth other than this  
Specification Should Dictate Allowance**

101. The endless use by the Office of citing other people's art (F+P over and over) instead of the above-entitled invention is utterly wrong. Applicant submits that if the Office must rely upon reference to art cut of a cloth other than this specification and claims, then their position must indeed be rather weak and should dictate allowance of the present invention.

**LAW**

102. The timely submitted, too-long-ignored, peer-reviewed publications, Exhibits and Declarations prove Applicant was correct on the filing date of the application [In re Hogan, 559 F.2d 595, 60S, 194 USPQ 527, 537 (CCPA 1977)]. They prove that the Applicant taught the subject matter defined by each of the rejected Claims including how his apparatus and method works, set forth the best mode contemplated, distinctly pointed out and claimed the subject matter which constitutes the invention, wrote an adequate enabling disclosure, and thus complied and conformed with 35U.S.C. §112, first paragraph, of the Patent Act. This was done so that an artisan, or those skilled in the art, could practice it without undue experimentation [In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988), citing with approval Ex parte Forman, 230 USPQ 546, 547 (Bd. Pat. App. &

Int. 1986)]. Applicant has now demonstrated that his invention as claimed was, and is, adequately described to one skilled-in-the-art. Said Declarations are sufficient in their factual content with respect to the significant evidence, and prove that the Examiner is in clear error. By submitting said peer-reviewed publications, showing the Applicant is correct, and said Declarations containing relevant facts by probative witnesses, the Applicant has now undertaken the full burden coming forward with his evidence as required [In re Oetiker, 977 F.2d at 1445, 24 USPQ2d at 1444].

Ignored (along with the evidence) yet again in the Examiner's Communication are the following standards of review. These were cited previously and no reason has been given by the Examiner for his deviation from said standards of review.

103. The Examiner ignores In re Prater, 415 F.2d 1393, 162 USPQ 541 (CCPA 1969)] which requires the Examiner to refer to the claimed invention as the focus of its Office communication, but it did not when drifting toward criticism of "FP".

The Examiner ignores In re Morris which requires that the Examiner must respond to what Applicant meant, but he did not.

The Examiner ignores In re Hogan [559 F.2d 595, 60S, 194 USPQ 527, 537 (CCPA 1977)] which discusses that enablement must be judged on the original specification and claims, but in this Communication it was not.

The Examiner ignores In re Fouche [439 F.2d 1237, 1243, 169 USPQ 429, 434, (CCPA 1971) and In re Zletz [893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989)] which state that an invention (in structure, operation and composition) is defined by the claims and the original specification.

The Examiner ignores In re Gazave, 54 CCPA 1524, 379 F.2d 973, 154 USPQ 92 (1967)] and In re Chilowsky [43 CCPA 775, 229 F.2d 457, 108 USPQ 321 (1956)] which require consideration of the material which Applicant supplied and cited.

The Examiner ignores *In re Oetiker*, 977 F.2d at 1445, 24 USPQ2d at 1444 which requires the Examiner to substantively respond with a prima facie case of unpatentability. However, after the submission of Swartz, 1998, Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes, Transactions of the American Nuclear Society, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85 and Swartz(97), other peer-review papers, and the Declarations, the burden shifts back to the Office and can only be discharged by the Examiner "presenting evidence or reasons why persons skilled-in-the-art would not recognize in the disclosure a description of the invention defined by the claims" [Wertheim, 541 F.2d at 263, 191 USPQ at 97]. Applicant asks that this be done with specificity, substantivity, and with explicit reference, and in detail with full findings of fact.

The Examiner ignores *In re Brana* and *In re Eltgroth*, 419 F.2d 918, 164 USPQ 221 (CCPA 1970) which demand that the Examiner must establish a reason to doubt an invention's asserted utility, and the loading of an isotopic fuel into a material by an applied electric field, using a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal and means to extract product using magnetic field inhomogeneity, based differential magnetic susceptibilities [cf. Swartz and Straus Declarations] is not 'incredible' or 'unbelievable' like the Examiner appears to purport. This invention is quite believable.

The Examiner ignores *In re Vaack* [947 F.2d 488, 495-96, 10 USPQ2d 1438, 1444 (Fed. Cir. 1991)] which states that an enablement rejection under section 112, ¶1 is only appropriate where the written description fails to teach those skilled-in-the-art, like the Declarants, to make and use the invention.

104. The Examiner ignores Rule 132 which requires Applicant's solid, substantial, and timely, evidence submitted against the Examiner's rejections be considered because "(p)atentability is determined on the totality of the record, by a preponderance of the evidence with due consideration to persuasiveness of argument." [Id. at 1445, 24 USPQ2d at 1444]. Applicant has published his inventions, proving that this invention was correctly taught in the original specification and claims, on the filing date of the application.

105. The Examiner has ignored controlling authorities including Clause 8 of Section 8, Article I, by improperly eliminating an entire field involving energy and United States security.

106. The Examiner has ignored controlling authorities including Article VI, by interfering laws passed by Congress [DIAMOND v. CHAKRABARTY; 447 U.S. 303, 309] including that patentable statutory subject matter spans "anything under the sun that is made by man" [S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)].

107. The Examiner has ignored controlling authorities including Article I, Section 2, by ignoring that Applicant is entitled to the privileges and immunities of citizens in the other states. Specifically, the Examiner ignores that the Office, Europe and Japan have allowed selected other patents in the very same field not allowed here [Czirr(5,231,290), Westphal(5,215,631), Ahern(5,411,654), Patterson(5,036,031), (5,318,675), (5,372,688), (5,036,031); Aspden, UK-GB 2,231,195B]. This is a dual-tiered system. No such demand was made of these other patents. There appear to be two different standards of review. Therefore, the Examiner has ignored controlling authorities including the reasoning of the Supreme Court in United States v. Nixon (1974) that all are "equal under the law". Hence, the Examiner has ignored controlling authorities including the 14th Amendment, requiring an impartial tribunal [28 U.S. Code Section 144, Mayberry v. Penna., 91 S.8.; Bloom v. Illinois, 88 Ct. 499 S.Ct. 1477; Duncan v. Louisiana, 88 S.Ct.1444] and equal protection. In the light of the previously unrebutted Declarations [hereby again submitted] there appear to be violations of the 14th Amendment's "equal protection" clause [Frontiero v. Richardson, 93 S.Ct. 1736, 411 U.S. 677; Weiss v. Weiss, 436 N.Y.S. 2d. 862, 52

N.Y. 2d. 170 (1981)] with serious implications [Gass v. Lopez, 95 S. Ct 729; Wood v. Strickland, 95 S Ct 9S2; U.S. v. Price, 86 S Ct 1152, 1157, Footnote 7; Griffin v. Breckenridge, 91 S Ct 179D; Gamez v. Toledo, 42 U.S.C.§1983, and Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics].

### **Conclusion: Operability Under U.S.C. 112, first paragraph**

108. In summary, the invention at issue in this case, '765, is claimed by Claims 1-10, 12-19, 21, and 22, and is generally speaking a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal and means to extract product using magnetic field inhomogeneity, based on differential magnetic susceptibilities.

Most importantly, Examiner should have considered, and commented upon substantively, the submitted evidence including:

#1) Declarations from scientists of ordinary skill-in-the-art, who considered the specification and stated that the written description was sufficient. Applicant is acknowledged by those involved in the state-of-the-art (Lin 97, Fox 97, Fox 96A, Rothwell 96). Said evidence shows that the Office's position is in error.

#2) The published peer-reviewed scientific articles [including but not limited to Swartz. M., 1994 "Catastrophic Active Medium Hypothesis of Cold Fusion", Vol. 4. "Proceedings: "Fourth International Conference on Cold Fusion", sponsored by EPRI and the Office of Naval Research, and Swartz, 1998, Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes, Transactions of the American Nuclear Society, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85 and Swartz(92, 94A, 97A, 97C)].

By ignoring such evidence consisting of Declarations, and peer-reviewed publications, the Examiner also ignores *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988) which indicates that #1 or #2 are sufficient to demonstrate that the specification provides an adequately written description of the subject matter, including how to operate the invention, and claimed the invention so that an artisan, or those skilled-in-the-art, could practice it without undue experimentation. Either #1 or #2 prove that enablement, utility, and validation. Together, #1 and #2 have been submitted and Applicant submits that these together corroborate enablement of the present invention both *de facto* and *de jure*.

109. There is compliance with 35 U.S.C. §112, first paragraph. The original specification and Claims 1-16 and 21-24 (all claims) taught the subject matter defined by each of the rejected claims, set forth the best mode contemplated, and did distinctly point out and claim the subject matter which constitutes the invention. This was CORROBORATED BY UNREBUTTED declarations, and SUPPORTED BY a peer-reviewed publication of ADDITIONAL PROBATIVE REFERENCE. These Declarations and Exhibit corroborate the Applicant, and prove, that operability and utility were taught in the original specification and claims. The present invention has operability and utility based upon the record, and has been validated based upon Exhibits and, more importantly, Declarations in the record - which remain ignored. The original specification and claims complied and conformed with the Patent Act.

The Applicant patently taught in the original specification and claims how his apparatus works and claimed the invention which solves a long-standing problem. The Applicant taught the subject matter defined by each of the rejected Claims including how his apparatus and method works, distinctly pointed out and claimed the subject matter which constitutes the invention, included specification and drawings describing the subject matter as defined by each of the claims, wrote an adequate enabling disclosure with specification and drawings which set forth the best mode contemplated by the inventor for carrying out the invention as described by the above-entitled application which enable any person skilled in the art to make and use the subject matter as defined by each of the claims, and thus complied and conformed with 35 U.S.C. §112, first paragraph, of the Patent Act.



110. Applicant has been willing to reveal to the public the substance of his discovery and "the best mode ... of carrying out his invention," 35 U.S.C. 112, and should be granted "the right to exclude others from making, using, or selling the invention throughout the United States," for a period of 17 years. 35 U.S.C. 154. In return, the federal patent system is supposed to encourage the creation and disclosure of new, useful, and non-obvious advances in technology and design in return for the exclusive right to practice the invention for a period of years [United States v. Dubilier Condenser Corp., 289 U.S. 178, 186-187 (1933)].

Therefore, in accordance with the foregoing arguments that Applicant has conformed with the requirements of sections 112 of the Patent Act, and reversal of the rejection of Claims 1-10, 12-19, 21, and 22 is respectfully requested, as required by the statute (35 USC 112) because the specification and all claims are compliant under 35 U.S.C. 112, first paragraph, and because said claims contain subject matter which was described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention, and because there is a written description in the specification able to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, toward possession of the claimed invention.

### Argument Regarding 35 U.S.C. §102

111. Claims 1-10, 12-19, 21 and 22 are rejected under 35 U. S. C.102(b) as being anticipated by Westfall (US 5,215,631), Claims 1, 2, 4, 5, 7, 10, 13, 15, 16 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Kinsella et al.(US 3,682,806), and Claims 1-8 and 13-16 are rejected under 35 U.S.C.102(b) as being anticipated by Patterson (US 5,318,675) or Patterson (US 5,372,688).

For each rejection under 35 U.S.C. 102, the Appellant fully and completely specified the errors in the rejection and why the rejected claims are patentable under 35 U.S.C. 102, including any specific limitations in the rejected claims which are not described in the prior art relied upon in the rejection. The appealed claims do not stand or fall together. claims 1, 4, and 13 are separately patentable and do not stand or fall together because they are materially distinct with respect to 35 USC 102.

112. The Office has simply ignored the Appellants arguments regarding Westfall (US 5,215,631). This was discussed in the previous Communication with the Examiner on pages 17 through 22 and page 39. Furthermore, it was again discussed by Applicant in the Communication of Applicant dated 5/5/03 including therein on pages 11 through 19. Where is the Examiner's substantive response?

#### === ERRORS BY EXAMINER REGARDING WESTFALL ===

113. The Office ignores that Westfall is not even relevant.

#### **THE TRUTH - The Above-Entitled Application is a Continuation of a 1991 Application**

Westfall was issued June 1, 1993 and was filed October 11, 1991. Westfall is a "continuation in part of serial number 514,192 which was abandoned, and certainly as different from the present application as Westfall. Ignoring for the moment that Westfall's invention is very different from the invention described by the present application, the Examiner should know that the present application is a continuation of the filing made 9/17/91. '970 was not abandoned. The Board is referred to Averments 270 and 271 below, and Exhibit E0.

114. The Office is utterly disingenuous and deceptive when it attempts to purport that "Westfall's process and apparatus read on file applicant's claims."

**THE TRUTH - Two Obviously Different Inventions**

This false statements by the Examiner attempt to minimize the scope of the vast differences between Westfall and the present invention. In the present invention, Figure 7 of the original specification, absolutely shows features which are not found in Westphal. For example, attention is directed to the four concentric components of the device surrounding the cathode, in coaxial fashion, including the deuteron diffusion barrier (labeled 50) and the expansion barrier (labeled 40). Where are they in Westphal? Attention is directed to the heavy water-LiOD-gel, labeled 6. Where is it in Westphal? Attention is directed to the device in Figure 7 shaped like a fuse, which "can be easily placed into, or removed from, an assembly and system". Where is it in Westphal?

In the present invention, Figure 8 shows features which are not found in Westphal. For example, attention is directed to the centrally placed axially-filled cathode, the coaxial deuteron-barrier, the coaxial expansion-barrier. Where are they in Westphal? Attention is directed to the structural support system (labeled 20), the expansion barrier (labeled 40), and the deuteron impermeable barrier (labeled 50). Where are they in Westphal?

In the present invention, Figure 9 shows features which are not found in Westphal. Attention is directed to the cluster of seven CAM devices, with their external structural casing support system and intercluster thermomechanical material. Where are they in Westphal?

In the present invention, Figure 10 shows features which are not found in Westphal. Attention is directed to the central axially-filled cathode, the two coaxial deuteron-barriers inner thermal pipe, and the structural support system labeled 20. Attention is also directed to the inner thermal barrier labeled 70, the outer deuteron barrier labeled 50, and the barrier to expansion is labeled 20. Exactly where are any of these in Westphal? In the present invention, Figure 10 shows four layers (from inner to outer) which in the preferred embodiment are made of diamond filament, gold, palladium, and gold. Where are they in Westphal?

In the present invention, Figure 11 shows features which are not found in Westphal. For example, attention is directed to the coaxially-filled cathode, the inner coaxial deuteron-barrier and thermal pipe in a cylindrical configuration, the electric fields in the radial direction, and the anode which is circumferential to the cathode [labeled 7]. Where are they in Westphal? Figure 11 shows solution (labeled 6) which consists of lithium deuterioxide, palladium deuterioxide, and heavy water as the preferred embodiment. Where is it in Westphal?

In the present invention, Figure 12 shows features which are not found in Westphal. attention is directed to the three CAM devices (labeled as 90), the intradevice gel containing lithium and palladium deuterioxide (labeled 6), the device receptor apparatus (labeled 93 in figure 12), the electrical and thermal connectors (labeled 96, and 97 respectively), the mechanical connecting system (labeled 94), the heat dissipative radiator (labeled 95), and the three cathodic connectors are connected to the control apparatus. Where is it in Westphal? Figure 12 shows CAM devices which are inserted, similar to a fuse onto a holding board (labeled 91) held in place by clips (labeled 92). Exactly where are any of these in Westphal?

In the present invention, Figure 13 shows features which are not found in Westphal. For example, attention is directed to the lamellar CAM reactor, the two orthogonal applied electric fields, the connections for the first electric field labeled as 81 and 82, the connections for the second electric field labeled as 85 and 86, the mechanical casing labeled 20, and the deuteron impermeable barrier which is comb-shaped in this preferred configuration, and is labeled 55 in Figure 13. Exactly where are any of these in Westphal?

In the present invention, Figure 14 shows features which are not found in Westphal. For example, attention is directed to the three lamellar CAM reactors labeled as 90 in figure 14, and the intradevice gel containing lithium and palladium deuterioxide (labeled 6), and anode (labeled 7) held in place by clips (labeled 102), the electrical bus to connect the anodes (labeled 105) which are connected to the anodic connectors (labeled 82), and the electrical bus which connects the cathodes (labeled 106 and 107). Where are these in Westphal? Attention is also directed to the thermal bus (labeled 107) connected to the heat pipes (labeled 70) which are held in a

mechanical connecting system (labeled 20), the deuteron-impermeable barriers (labeled 55 in figure 14), the heat pipes (70) and the thermal bus (107). Are any of these in Westphal?

In the present invention, Figure 15 shows features which are not found in Westphal. For example, attention is directed to the mechanical casing labeled 20, the deuteron impermeable barrier labeled 55, and the external structures labeled 110 and 120, circumferential to the casing (20) which are used to squeeze the CAM reactor. Where are they in Westphal?

In the present invention, Figure 16 shows features which are not found in Westphal. Attention is directed to the three pressure-activated CAM reactors, the heat pipes (labeled 70), the expansion barrier (40), the deuteron diffusion barrier (labeled 50), the external casing (20), the thermomechanical connector (labeled 130), the external thermal bus (140), holding board (150, 151 above and below the assembly), and the external structures labeled 110 and 120 near-circumferential. Where are they in Westphal?

In the present invention, Figure 17 shows features which are not found in Westphal. For example, attention is directed to the transistor-like header (labeled as 200). Where is this in Westphal? Attention is directed to the perforated by six (6) holes accommodate insulators (labeled 210), the six electric leads (182, 185, 181, and 186), and two thermal connections (labeled 170 in figure 17). Where are they in Westphal?

In the present invention, Figure 18 shows features which are not found in Westphal. For example, attention is directed to the extraction of isotopic nuclear fusion product (e.g. tritium) by an axially loaded cathode (labeled 1; anode is labeled 7) using an inhomogenous magnetic field intensity applied by coil labeled 300 to one portion of the cathode (1). Where is any of this in Westphal?

The Applicant's invention, '765, does not read on Westfall's process, as the Examiner suggests.

115. The Office has been disingenuous about Westfall's materials.

**THE TRUTH - The Environments, Methods, and Elements Are Radically Different**

If the materials and elements used in Westfall, as suggested by the examiner, were to be used in the present invention, they would not function. Westfall --as it claims-- is simply a process and an apparatus for growing crystals in linear growth rate (column 36 lines 17 through 22), useful for freestanding single crystals of tin in its cubic and tetragonal forms. Furthermore, if the present invention was used as discussed in Westfall, the materials of '765 would not even be functional. Temperatures required for Westfall are such that, "crucibles must be chosen which are able to survive the corrosive nature of the molten salt baths" (column 32 lines 55 through 59). If the present invention, '765, was used as described in Westfall, it would not even work. The Examiner should address this.

The Applicant's invention, '765, does not read on Westfall's process, as the Examiner suggests.

116. The Office has been disingenuous about Westfall's loading.

**THE TRUTH - The Examiner is Incorrect about Location and Loading**

First, when hydrogen appears in Westfall it is not for loading. It is to the air as gas (column 9, line 35 through 43, especially lines 39 referring to "bubbling"). This is different from that used in the present invention which is loaded as taught in the present invention's original specification and claims, and will be explained in detail below. This "bubbling" of hydrogen in Westfall is different from this application which involves loading an isotopic fuel to said material, loading said isotopic fuel into said material by an applied electric field, and then at a later point in time applying a second applied electric field to redistribute said isotopic fuel within said material, means to control the distribution of the loaded isotopic fuel within the material, means including barriers impermeable to the flow of said isotopic fuel within said material, as discussed in the present invention's original specification and claims.

This is corroborated because there is no mention of internal flows in the metal in Westfall. Furthermore, in Westfall all applied fields are synchronous, whereas in '765 they are metachronous (at different points in time).

Second, unlike the present invention, Westfall does not discuss loading which would be negligible at best. Furthermore there is no mention of internal flows within any part of Westfall. Corroborating this, in the present invention, the hydrogen sought is that within the palladium, which is not even discussed in Westfall.

The Examiner should discuss this which was previously addressed on pages 17-22, 39, and 57-71.

The Applicant's invention, '765, does not read on Westfall's process, as the Examiner suggests.

117. Furthermore, the present invention uses hydrogen INSIDE a metal such as palladium for purposeful reasons, which are clearly different from the ions making large crystals quickly OUTSIDE the metal, such as described in Westfall. Attention is directed to the fact that in Westfall, unlike the present invention, there are enlarging metal crystals, ribbon crystalline growth systems, tin in its cubic and tetragonal forms, and crucibles using molten salt baths. Westfall's invention, a process and an apparatus for growing crystals of tin in its cubic and tetragonal forms controls ions OUTSIDE of the enlarging metal crystals (figures 2a through 2d, therein). Westfall refers to saturation OUTSIDE of the metal crystal and is an entirely different teaching from the present invention. Westfall does not even discuss loading into the material (underlined in Examiner's quote for emphasis). Furthermore there is no mention of internal flows within any part of Westfall. Thus, it cannot read on the present invention, a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal and means to extract product using magnetic field inhomogeneity, based differential magnetic susceptibilities.

Corroborating this, Westfall admits that the apparatus of Westfall is no more than a means to a process and an apparatus for growing crystals by electrodeposition with rapid metal growth rates at 4.2 feet per hour (column 36 lines 17 through 22). Westfall admits it makes photovoltaic cells (column 13, lines 55 through 66). Westfall also admits that crucibles must be chosen which are able to survive corrosive molten salt baths (column 32 lines 55 through 59).

Thus, the present invention is novel and not anticipated by the cited art, Westfall. Nowhere in Westfall, or in any combination of the Examiner's art, is any aspect of the features of '765. Thus, it cannot read on the present invention, a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal.

The Applicant's invention, '765, does not read on Westfall's process, as the Examiner suggests.

118. The Office has been totally disingenuous about Westfall's alleged loading.

**THE TRUTH - Different Inventions and Locations**

This statement by the examiner is false. Heat and loading are as different as heat and charge or heat and the number of oranges in a basket. They are different. Furthermore, even the locations involved are different. US 5,215,631 discloses a process and an apparatus for growing crystals by electrodeposition which 1) involves ions other than hydrogen, 2) and they are on the OUTSIDE of the metal. Unlike the present invention, Westfall does not discuss loading. Furthermore there is no mention of internal flows within any part of Westfall. Westfall's invention, a process and an apparatus for growing crystals of tin in its cubic and tetragonal forms controls ions OUTSIDE of the enlarging metal crystals (figures 2a through 2d, therein). Westfall refers to saturation OUTSIDE of the metal crystal and is an entirely different teaching from the present invention. Corroborating this, Westfall admits that the apparatus of Westfall is no more than a means to a process and an apparatus for growing crystals by electrodeposition with rapid metal growth rates at 4.2 feet per hour (column 36 lines 17 through 22). Westfall admits it makes photovoltaic cells (column 13, lines 55 through 66). Westfall also admits that crucibles must be chosen which are able to survive corrosive molten salt baths (column 32 lines 55 through 59).

By contrast, the original specification and claims of the present invention, '765, claim a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal and means to extract product using magnetic field inhomogeneity, based differential magnetic susceptibilities.



Therefore, the material of Applicant's invention, '765, does not read on Westfall's process and an apparatus for growing crystals by electrodeposition, as the Examiner suggests. The apparatus described in Westfall has none of the properties of the apparatus described in the present invention. This demonstrates they are different patents entirely with different uses, reasons, and methods.

119. The Office, claiming there are no "critical features" now misleads.

**THE TRUTH - Multiple Critical Features are Present in this Invention**

This statement by the examiner does not address that the present invention has many novel features which are simply not present in Westphal. For example, the Examiner should consider the following, without demeaning any of the other features of the present invention.

In the present invention, Figure 10 shows features which are not found in Westphal. Attention is directed to the inner thermal barrier labeled 70, the outer deuteron barrier labeled 50, and the barrier to expansion is labeled 20. Exactly where are any of these in Westphal?

In the present invention, Figure 11 shows features which are not found in Westphal. For example, attention is directed to the coaxially-filled cathode, and thermal pipe in a cylindrical configuration, and the anode which is circumferential to the cathode [labeled 7]. Where are they in Westphal?

In the present invention, Figure 12 shows features which are not found in Westphal. Attention is directed to the three CAM devices (labeled as 90), the mechanical connecting system (labeled 94), and the heat dissipative radiator (labeled 95). Exactly where are any of these in Westphal?

In the present invention, Figure 14 shows features which are not found in Westphal. For example, attention is directed to the thermal bus (labeled 107) connected to the heat pipes (labeled 70) which are held in a mechanical connecting system (labeled 20), the heat pipes (70) and the thermal bus (107). Are any of these in Westphal?

In the present invention, Figure 16 shows features which are not found in Westphal. Attention is directed to the heat pipes (labeled 70), the thermomechanical

connector (labeled 130), and the external thermal bus (140) and holding board (150, 151 above and below the assembly. Where are they in Westphal?

In the present invention, Figure 17 shows features which are not found in Westphal. For example, attention is directed to the transistor-like header (labeled as 200), especially the two thermal connections (labeled 170 in figure 17). Where are they in Westphal?

Attention is directed to the fact that, also, the following elements shown in Westfall are not present, or needed, or claimed in the present invention. Said unneeded elements numbered in Westfall as bath (4, column 8, line 5), reference electrode (14), light source (18), stepping motor (22) and its mechanical connection to the cathode (8) are not needed in the present invention, as described in the original specification and claims, thereby proving the present invention has significant novelty and non-obviousness -- and is simply a different invention.

120. The Office disingenuously misstates that Westfall is the same as the present patent even though Westfall discloses,

*"... the electrolytic apparatus ... comprising a bath (4) between a working electrode (where the crystal growth occurs) and a counter electrode (which replenishes the electrolytic solution's concentration of ions of the to-be-deposited material. The bath is used by passing current between the working and counter electrodes"*

**THE TRUTH - Different Purposes. Westfall makes growing crystals at 4.2 feet per hour**

US 5,215,631 discloses a process and an apparatus for growing large crystals by electrodeposition. Westfall, as discussed therein, grows enlarging metal crystals as shown in figures 2a through 2d, therein. Westfall's invention is to produce dendritic crystals and explicitly involves ribbon crystal and crystalline growth systems with growth rates (deposition rates) of 4.2 feet per hour in linear growth rate (column 36 lines 17 through 22). Westfall's crystals, grown at 4.2 feet per hour, do not have the purpose, advanced technology, features, and advantages of the present invention.

Unlike Westfall, '765 teaches a two-stage method to control loading which solves the long-standing problem of controlling hydrogen flow in metals and extracting product using magnetic field inhomogeneity based differential magnetic susceptibilities - features of great utility. This is clearly shown in the Figures, and discussed, in the original specification of '765. The present invention, '765, claims a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal and means to extract product using magnetic field inhomogeneity, based differential magnetic susceptibilities, as taught in the above-entitled patent application. Ignored by the Dr. Palabrica, the material of Applicant's invention, '765, does not read on Westfall as the Examiner suggests. Westfall's enlarging metal crystals (figures 2a through 2d, therein) in ribbon crystal and crystalline growth systems have claims and teachings which are not the same as a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal and means to extract product using magnetic field inhomogeneity, based differential magnetic susceptibilities, as taught in the above-entitled patent application.

121. The Office has misstated the fields used in Westfall, when falsely stating that

*"Westfall further discloses the use of orthogonal electric fields as part of the nucleation manipulation techniques for crystal growth control. ... The orthogonal electric field reads on "means for producing a change in the quantity of said isotopic fuel."*

**THE TRUTH - Different Current Locations, Purposes, Time courses**

Westfall does not disclose orthogonal electric fields as taught in the present invention's original specification. The present invention uses them within the electrode as the specification and claims prove. Thus the material of Applicant's invention, '765, does not read on Westfall's process and apparatus for growing crystals by electrodeposition, as the Examiner suggests. This invention is a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal and means to

extract product using magnetic field inhomogeneity, based differential magnetic susceptibilities. Two stage process here after loading. Not in Westfall. Furthermore, in Westfall, all applied electric field intensities are synchronous in time, whereas in '765 they are applied metachronously (at different points in time). The Applicant's invention, '765, does not read on Westfall's process, as the Examiner suggests.

122. The Office inaccurately states the content of the Westfall's solution and the alleged means to remove the product, i.e., formed crystal.

#### **THE TRUTH - CONTAMINATION QUANTITY IS INSUFFICIENT**

This is inaccurate because any putative cationic contaminant which the Examiner proposes, but for which there is no plan, will electrodeposit. Furthermore, as discussed with the Examiner previously, because of the divergence principle (no net creation of the putative contaminant so therefore the divergence = 0). The Examiner should read the books which the Applicant suggested previously regarding this because they are well-known to those familiar with the state-of-the-art. The applied electric field is direct to move cations (i.e.  $\text{Pd}^{++}$ ) to the cathode where it plates out. The Examiner is referred to the following on electrochemistry and continuum electrodynamics, sine qua non to those skilled in the art [Uhlig, H.H., "Corrosion and Corrosion Control", Wiley (1971); BOCKRIS, J., K.N. REDDY, "Modern Electrochemistry", Plenum Press (1970); VON HIPPEL, A. "Dielectric Materials and Applications", MIT Press, (1954); VON HIPPEL, A., D.B. KNOLL, W.B. WESTPHAL, "TRANSFER OF PROTONS THROUGH 'Pure' ICE Ih SINGLE CRYSTALS", J. Chem. Phys., 54, 134, (also 145), (1971), and MELCHER, J.R., "Continuum Electromechanics", MIT Press, Cambridge, (1981). Therefore the Examiners statement is incorrect after the application of the only electric field intensity in Pons, and the first electric field intensity in the present application.

In summary, the subject matter of Applicant's invention, '765, again does not read on the Examiner's cited art which are not the same as a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal and means to extract product using magnetic field inhomogeneity, based differential magnetic susceptibilities, as taught in the

above-entitled patent application. The Applicant's invention, '765, does not read on Westfall's process, as the Examiner suggests.

**=== ERRORS BY EXAMINER REGARDING KINSELLA ===**

123. Claims 1, 2, 4, 5, 7, 10, 13, 15 and 16 and 21 have been rejected under 35 U.S.C. 102 (b) as being anticipated by Kinsella (U.S. 3,682, 806). As discussed below, the Applicant demonstrates that said rejection is an error. This was discussed in the previous Communication with the Examiner on pages 33 through 37 and page 39. The Applicant thanks the Examiner for his response to a few of the comments (and they are addressed below), but where is the Examiner's substantive response to the rest?

Kinsella was again discussed by Applicant in the Communication of Applicant dated 5/5/03 including therein on pages 20-27. Where is the Examiner's substantive response?

**Where is the Examiner's response to the Applicant's other arguments?**

Instead, the Examiner once again, has inadvertently or unintentionally just unfairly asked the same question.

Kinsella --as it claims-- is simply a process for electroplating metallic articles with carboxylic film-forming materials in a process utilizing lithium hydroxide as solubilizer (see Fig. 1 and column 8, 2nd paragraph). Kinsella demonstrates the most rudimentary of an electroplating process and it does not have the purpose, advanced technology, features, and advantages of the present invention. Kinsella, uses a stainless steel cathode, and only a one stage process. Kinsella uses no loading, or has no features of the present application. Corroborating this, from Kinsella, the Examiner quotes that 'Fig. 1 shows the anode (4), which is the material to be coated, a stainless steel cathode (6)'. Furthermore, as additional further proof in Kinsella the text explicitly states, as the Examiner quotes 'An alternative embodiment can have an auxiliary platinum anode (7) and an auxiliary stainless steel cathode (8)'. Kinsella leads away from the present invention as it uses a cationic membrane to divide the cathodic compartment (number 1 in Kinsella, column 9 line 65), a regenerated ion exchange resin (column 10 line 14), a auxiliary platinum anode ("7", column 10 line

15), a selective, electrodialysis membrane to contain ion exchange resin ("9" and "12", column 10 lines 19-23), and a solubilized feed makeup material introduced to the anode ("11", column 10 line 11), which are not needed in the present invention, as described in the original specification and claims.

Thus, the present invention, unlike Kinsella which uses methods well known to those who work in the art, is not an electroplating process of carboxylic film-forming materials, but in the preferred embodiment is a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal. The present invention uses a two-stage process, loading of hydrogen, a metal electrode such as palladium, a first stage of electrode loading, and a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal, for purposeful reasons, which are clearly different from the carboxylic film-forming processes described in Kinsella. The Applicant's invention, '765, does not read on Kinsella's invention, as the Examiner suggests.

#### **THE TRUTH -Different Inventions, Different Claims**

124. The Examiner is incorrect and disingenuous. Kinsella is nothing like the present invention. The Examiner minimizes the scope of the differences between Kinsella and the present invention. In the present invention, Figure 7 of the original specification, absolutely shows features which are not found in Kinsella. For example, attention is directed to the four concentric components of the device surrounding the cathode, in coaxial fashion, including the deuteron diffusion barrier (labeled 50) and the expansion barrier (labeled 40). Where are they in Kinsella? Attention is directed to the heavy water-LiOD-gel, labeled 6. Where is it in Kinsella? Attention is directed to the device in Figure 7 shaped like a fuse, which "can be easily placed into, or removed from, an assembly and system". Where is it in Kinsella?

In the present invention, Figure 8 shows features which are not found in Kinsella. For example, attention is directed to the centrally placed axially-filled cathode, the coaxial deuteron-barrier, the coaxial expansion-barrier. Where are they in Kinsella? Attention is directed to the structural support system (labeled 20), the

expansion barrier (labeled 40), and the deuteron impermeable barrier (labeled 50). Where are they in Kinsella?

In the present invention, Figure 9 shows features which are not found in Kinsella. Attention is directed to the cluster of seven CAM devices, with their external structural casing support system and intercluster thermomechanical material. Where are they in Kinsella?

In the present invention, Figure 10 shows features which are not found in Kinsella. Attention is directed to the central axially-filled cathode, the two coaxial deuteron-barriers inner thermal pipe, and the structural support system labeled 20. Attention is also directed to the inner thermal barrier labeled 70, the outer deuteron barrier labeled 50, and the barrier to expansion is labeled 20. Exactly where are any of these in Kinsella? In the present invention, Figure 10 shows four layers (from inner to outer) which in the preferred embodiment are made of diamond filament, gold, palladium, and gold. Where are they in Kinsella?

In the present invention, Figure 11 shows features which are not found in Kinsella. For example, attention is directed to the coaxially-filled cathode, the inner coaxial deuteron-barrier and thermal pipe in a cylindrical configuration, the electric fields in the radial direction, and the anode which is circumferential to the cathode [labeled 7]. Where are they in Kinsella? Figure 11 shows solution (labeled 6) which consists of lithium deuterioxide, palladium deuterioxide, and heavy water as the preferred embodiment. Where is it in Kinsella?

In the present invention, Figure 12 shows features which are not found in Kinsella. attention is directed to the three CAM devices (labeled as 90), the intradevice gel containing lithium and palladium deuterioxide (labeled 6), the device receptor apparatus (labeled 93 in figure 12), the electrical and thermal connectors (labeled 96, and 97 respectively), the mechanical connecting system (labeled 94), the heat dissipative radiator (labeled 95), and the three cathodic connectors are connected to the control apparatus. Where is it in Kinsella? Figure 12 shows CAM devices which are inserted, similar to a fuse onto a holding board (labeled 91) held in place by clips (labeled 92). Exactly where are any of these in Kinsella?

In the present invention, Figure 13 shows features which are not found in Kinsella. For example, attention is directed to the lamellar CAM reactor, the two orthogonal applied electric fields, the connections for the first electric field labeled as 81 and 82, the connections for the second electric field labeled as 85 and 86, the mechanical casing labeled 20, and the deuteron impermeable barrier which is comb-shaped in this preferred configuration, and is labeled 55 in Figure 13. Exactly where are any of these in Kinsella?

In the present invention, Figure 14 shows features which are not found in Kinsella. For example, attention is directed to the three lamellar CAM reactors labeled as 90 in figure 14, and the intradevice gel containing lithium and palladium deuterioxide (labeled 6), and anode (labeled 7) held in place by clips (labeled 102), the electrical bus to connect the anodes (labeled 105) which are connected to the anodic connectors (labeled 82), and the electrical bus which connects the cathodes (labeled 106 and 107). Where are these in Kinsella? Attention is also directed to the thermal bus (labeled 107) connected to the heat pipes (labeled 70) which are held in a mechanical connecting system (labeled 20), the deuteron-impermeable barriers (labeled 55 in figure 14), the heat pipes (70) and the thermal bus (107). Are any of these in Kinsella?

In the present invention, Figure 15 shows features which are not found in Kinsella. For example, attention is directed to the mechanical casing labeled 20, the deuteron impermeable barrier labeled 55, and the external structures labeled 110 and 120, circumferential to the casing (20) which are used to squeeze the CAM reactor. Where are they in Kinsella?

In the present invention, Figure 16 shows features which are not found in Kinsella. Attention is directed to the three pressure-activated CAM reactors, the heat pipes (labeled 70), the expansion barrier (40), the deuteron diffusion barrier (labeled 50), the external casing (20), the thermomechanical connector (labeled 130), the external thermal bus (140), holding board (150, 151 above and below the assembly), and the external structures labeled 110 and 120 near-circumferential. Where are they in Kinsella?



In the present invention, Figure 17 shows features which are not found in Kinsella. For example, attention is directed to the transistor-like header (labeled as 200). Where is this in Kinsella? Attention is directed to the perforated by six (6) holes accommodate insulators (labeled 210), the six electric leads (182, 185, 181, and 186), and two thermal connections (labeled 170 in figure 17). Where are they in Kinsella?

In the present invention, Figure 18 shows features which are not found in Kinsella. For example, attention is directed to the extraction of isotopic nuclear fusion product (e.g. tritium) by an axially loaded cathode (labeled 1; anode is labeled 7) using an inhomogenous magnetic field intensity applied by coil labeled 300 to one portion of the cathode (1). Where is any of this in Kinsella?

The Applicant's invention, '765, does not read on Kinsella's invention, as the Examiner suggests.

125. NOTA BENE: The materials described in Kinsella do not have the properties of the materials described in the present invention. The present invention is novel and not anticipated by Kinsella. Nowhere in Kinsella is any aspect of the features of '765. The materials described in Kinsella do not have the properties of the materials described in the present invention. The methods described in Kinsella are not the methods described in the present invention. Furthermore, if the materials and elements used in Kinsella, here the cationic membrane to divide the cathodic compartment (number 1 in Kinsella, column 9 line 65), a regenerated ion exchange resin (column 10 line 14), a auxiliary platinum anode ("7", column 10 line 15), a selective electrodialysis membrane to contain ion exchange resin ("9" and "12", column 10 lines 19-23), and a solubilized feed makeup material introduced to the anode ("11", column 10 line 11), as suggested by the examiner, were to be used in the present invention, they would not function. Similarly, if the present invention, '765, was used as described in Kinsella, it would not be functional. The Applicant's invention, '765, does not read on Kinsella's invention, as the Examiner suggests.

126. The methods described in Kinsella are not the methods described in the present invention. Corroborating this, attention is directed to the fact that the following elements shown in Kinsella are not present, or needed, or claimed in the present invention. Said unneeded elements numbered in Kinsella as 1 (cationic

membrane to divide the cathodic compartment (column 9 line 65), 7 (a auxiliary platinum anode (column 10 line 15), 9 (a selective electrodialysis membrane to contain ion exchange resin (column 10 lines 19-23), and 11 (a solubilized feed makeup material introduced to the anode ( column 10 line 11) are not needed in the present invention, as the described in the original specification and claims, thereby proving the present invention has significant novelty and non-obviousness.

127. The Office disingenuously states the issue of loading in Kinsella.

**THE TRUTH Loading is Different from Crystal Growth**

The Office is disingenuous again. First, Applicant has said much about contamination issues to which the Examiner near-endlessly inaccurately points. However, the Examiner never discusses exactly what the Applicant of the above-entitled invention actually wrote.

Second, even the currents are handled differently in these two different inventions. This patent application teaches the loading current is into the volume of the cathode in contrast to the cited patent. In Kinsella, the loading current is onto the surface of the cathode in contrast to the cited patent which loads the volume for different purpose. Kinsella electroplates metallic articles with carboxylic films (column 8, 2nd paragraph). Unlike the present invention where there is a specialized palladium (or other hydrogen loading) cathode, in Kinsella, there is only a stainless steel cathode. Corroborating this, from Kinsella, the Examiner quotes that 'Fig. 1 shows the anode (4), which is the material to be coated, a stainless steel cathode (6)'. Furthermore, as additional further proof in Kinsella the text explicitly states, as the Examiner quotes 'An alternative embodiment can have an auxiliary platinum anode (7) and an auxiliary stainless steel cathode (8)'.

Third, further corroborating this, attention is directed to the fact that Kinsella leads away from the present invention as it uses a cationic membrane to divide the cathodic compartment (number 1 in Kinsella, column 9 line 65), a regenerated ion exchange resin (column 10 line 14), a auxiliary platinum anode ("7", column 10 line 15), a selective electrodialysis membrane to contain ion exchange resin ("9" and "12", column 10 lines 19-23), and a solubilized feed makeup material introduced to the anode ("11", column 10 line 11) which are not needed in the present invention, as

the described in the original specification and claims. This proves that the present invention has significant novelty and non-obviousness. Fourth, attention is again directed to the fact that in Kinsella, unlike the present invention where there is a specialized palladium (or other hydrogen loading) cathode, in Kinsella, there is only a stainless steel cathode, only a one stage process, no loading, and no features of the present application.

The Applicant's invention, '765, does not read on Kinsella's invention, as the Examiner suggests.

128. The Office deliberately misreads Kinsella regarding 'current'.

**THE TRUTH - ELECTRODEPOSITION CURRENT IS NOT THE LOADING CURRENT**

The material of Applicant's invention, '765, does not read on Kinsella's electroplating process using carboxylic film-forming materials, as the Examiner suggests. Kinsella's invention is an electroplating process carboxylic film-forming materials which cannot be the same as a two-stage process involving loading of hydrogen into palladium. Kinsella --as it claims-- processes carboxylic film-forming materials with lithium hydroxide as solubilizer (see Fig. 1 and column 8, 2nd paragraph). This cannot read on the hydrogen of the present patent because the applicant uses hydrogen as the loaded material. In addition, the 'anode' of Kinsella cannot be the 'material' because in the present patent, it is cathodically controlled and used for a different purpose.

The 'electrodeposition current' cannot read on 'loading of isotopic fuel into material' because in Kinsella, unlike the present invention where there is a specialized palladium (or other hydrogen loading) cathode, there is only a stainless steel cathode (6). Furthermore, Kinsella uses a cationic membrane to divide the cathodic compartment (number 1 in Kinsella, column 9 line 65), a regenerated ion exchange resin (column 10 line 14), a auxiliary platinum anode ("7", column 10 line 15), a selective electrodialysis membrane to contain ion exchange resin ("9" and "12", column 10 lines 19-23), and a solubilized feed makeup material introduced to the anode ("11", column 10 line 11) which are not needed in the present invention, or used therein for the purposes which Kinsella states. This proves that the present invention has significant novelty and non-obviousness.

Kinsella's invention, which is an electroplating process, carboxylic film-forming materials, is not the same as a two-stage process involving loading of hydrogen into palladium discussed in the present invention's original specification and claims. '765 reads on a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal. The Applicant's invention, '765, does not read on Kinsella's invention, as the Examiner suggests.

129. The Office states,

*"Claims 1-8 and 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Patterson (US 5,318,675) or Patterson (US 5,372,688)."*

**THE TRUTH - The Present Application is a Continuation of an Application filed in 1991**

As discussed below, the Applicant demonstrates that said rejection remains a salient error. The applicant notes that the application '970 -of which the present invention '765 is a continuation of- was filed September 17, 1991, prior to Patterson-1,2. In addition it precedes the filing date of Patterson-1,2.

Nonetheless *in arguendo*, the applicant will now discuss Patterson-1,2 in full detail to demonstrate that even if they were timely, they are not relevant to the present novel invention which is not anticipated by the cited art, Patterson-1,2. Furthermore, nowhere in Patterson-1,2, or in any combination of the Examiner's art, are any aspect of the features of '765.

The inventions are vastly different. Patterson discloses an electrolytic cell consisting of cathodic beads located in a flow calorimetric system. Patterson's invention is a simple electrolytic cell consisting of beads and Patterson claims said rudimentary electrolytic cell filled with beads of mixed metals, arranged as cathodic beads, with the entire aggregation of beads then located in a flow calorimetric system. This is discussed in Patterson and Cravens 5,607,563 "System for Electrolysis", hereinafter Patterson-3. Thus, Patterson uses a pump (18 in Patterson; column 3 line 11), reservoir (32; column 3 line 12), slide valve (22; column 3 line 24), second slide valve (30; column 3 line 25), test reservoir (34; column 3 line 26), inlet and outlet stoppers (54 and 56; column 3 line 39-40), conductive palladium

coated microsphere (36; column 3 line 54, and column 4 lines 41 through 60), a "conductive (sic) foraminous grid" (38; column 3 line 56).

Furthermore, Patterson strives for "electrolysis" as the titles, description and claims of Patterson 1, and 2 admit.

In addition, and thus, Patterson --as it claims-- is simply an electrolytic cell consisting of cathodic beads located in a flow calorimetric system. Patterson demonstrates the most rudimentary electrolytic cell and does not have the advanced technology, features, and advantages of the present invention. Patterson includes none of the features of the present invention. The methods described in Patterson are not the methods described in the present invention. The apparatus described in Patterson has none of the properties of the apparatus described in the present invention. Therefore, Patterson is not the same as a two-stage process involving loading of hydrogen into palladium discussed in the present invention's original specification and claims.

By contrast, the present invention is not a simple electrolytic cell consisting of beads, but in the preferred embodiment, a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal. This is the opposite of Patterson. In addition, by contrast, the present invention minimizes electrolysis, exactly the opposite of Patterson-1, 2, and 3.

This present invention is novel and not anticipated by Patterson 1 or 2 or 3. If the present invention, '765, was used as described in Patterson, it would not even work.

130. The Office disingenuously describes the Patterson invention.

**THE TRUTH - These are Different Patents with Different Features and Parts**

This statement by the examiner is false. This statement by the examiner is minimizes the scope of the differences between Patterson and the present invention. In the present invention, Figure 7 of the original specification, absolutely shows features which are not found in Patterson. For example, attention is directed to the four concentric components of the device surrounding the cathode, in coaxial fashion, including the deuteron diffusion barrier (labeled 50) and the expansion barrier (labeled 40). Where are they in Patterson? Attention is directed to the heavy

water-LiOD-gel, labeled 6. Where is it in Patterson? Attention is directed to the device in Figure 7 shaped like a fuse, which "can be easily placed into, or removed from, an assembly and system". Where is it in Patterson?

In the present invention, Figure 8 shows features which are not found in Patterson. For example, attention is directed to the centrally placed axially-filled cathode, the coaxial deuteron-barrier, the coaxial expansion-barrier. Where are they in Patterson? Attention is directed to the structural support system (labeled 20), the expansion barrier (labeled 40), and the deuteron impermeable barrier (labeled 50). Where are they in Patterson?

In the present invention, Figure 9 shows features which are not found in Patterson. Attention is directed to the cluster of seven CAM devices, with their external structural casing support system and intercluster thermomechanical material. Where are they in Patterson?

In the present invention, Figure 10 shows features which are not found in Patterson. Attention is directed to the central axially-filled cathode, the two coaxial deuteron-barriers inner thermal pipe, and the structural support system labeled 20. Attention is also directed to the inner thermal barrier labeled 70, the outer deuteron barrier labeled 50, and the barrier to expansion is labeled 20. Exactly where are any of these in Patterson? In the present invention, Figure 10 shows four layers (from inner to outer) which in the preferred embodiment are made of diamond filament, gold, palladium, and gold. Where are they in Patterson?

In the present invention, Figure 11 shows features which are not found in Patterson. For example, attention is directed to the coaxially-filled cathode, the inner coaxial deuteron-barrier and thermal pipe in a cylindrical configuration, the electric fields in the radial direction, and the anode which is circumferential to the cathode [labeled 7]. Where are they in Patterson? Figure 11 shows solution (labeled 6) which consists of lithium deuterioxide, palladium deuterioxide, and heavy water as the preferred embodiment. Where is it in Patterson?

In the present invention, Figure 12 shows features which are not found in Patterson. Attention is directed to the coaxially-filled cathode, the inner coaxial deuteron-barrier and thermal pipe in a cylindrical configuration, the electric fields in the radial direction, and the anode which is circumferential to the cathode [labeled 7]. Where are they in Patterson?

In the present invention, Figure 12 shows features which are not found in Patterson. Attention is directed to the three CAM devices (labeled as 90), the intradevice gel containing lithium and palladium deuterioxide (labeled 6), the device receptor apparatus (labeled 93 in figure 12), the electrical and thermal connectors (labeled 96, and 97 respectively), the mechanical connecting system (labeled 94), the heat dissipative radiator (labeled 95), and the three cathodic connectors are connected to the control apparatus. Where is it in Patterson? Figure 12 shows CAM devices which are inserted, similar to a fuse onto a holding board (labeled 91) held in place by clips (labeled 92). Exactly where are any of these in Patterson?

In the present invention, Figure 13 shows features which are not found in Patterson. For example, attention is directed to the lamellar CAM reactor, the two orthogonal applied electric fields, the connections for the first electric field labeled as 81 and 82, the connections for the second electric field labeled as 85 and 86, the mechanical casing labeled 20, and the deuteron impermeable barrier which is comb-shaped in this preferred configuration, and is labeled 55 in Figure 13. Exactly where are any of these in Patterson?

In the present invention, Figure 14 shows features which are not found in Patterson. For example, attention is directed to the three lamellar CAM reactors labeled as 90 in figure 14, and the intradevice gel containing lithium and palladium deuterioxide (labeled 6), and anode (labeled 7) held in place by clips (labeled 102), the electrical bus to connect the anodes (labeled 105) which are connected to the anodic connectors (labeled 82), and the electrical bus which connects the cathodes (labeled 106 and 107). Where are these in Patterson? Attention is also directed to the thermal bus (labeled 107) connected to the heat pipes (labeled 70) which are held in a mechanical connecting system (labeled 20), the deuteron-impermeable barriers (labeled 55 in figure 14), the heat pipes (70) and the thermal bus (107). Are any of these in Patterson?

In the present invention, Figure 15 shows features which are not found in Patterson. For example, attention is directed to the mechanical casing labeled 20, the deuteron impermeable barrier labeled 55, and the external structures labeled 110 and 120, circumferential to the casing (20) which are used to squeeze the CAM reactor. Where are they in Patterson?

In the present invention, Figure 16 shows features which are not found in Patterson. Attention is directed to the three pressure-activated CAM reactors, the heat pipes (labeled 70), the expansion barrier (40), the deuteron diffusion barrier (labeled 50), the external casing (20), the thermomechanical connector (labeled 130), the external thermal bus (140), holding board (150, 151 above and below the assembly), and the external structures labeled 110 and 120 near-circumferential. Where are they in Patterson?

In the present invention, Figure 17 shows features which are not found in Patterson. For example, attention is directed to the transistor-like header (labeled as 200). Where is this in Patterson? Attention is directed to the perforated by six (6) holes accommodate insulators (labeled 210), the six electric leads (182, 185, 181, and 186), and two thermal connections (labeled 170 in figure 17). Where are they in Patterson?

In the present invention, Figure 18 shows features which are not found in Patterson. For example, attention is directed to the extraction of isotopic nuclear fusion product (e.g. tritium) by an axially loaded cathode (labeled 1; anode is labeled 7) using an inhomogenous magnetic field intensity applied by coil labeled 300 to one portion of the cathode (1). Where is any of this in Patterson?

The Examiner should also address the fact that Patterson uses a pump (18 in Patterson; column 3 line 11), reservoir (32; column 3 line 12), slide valve (22; column 3 line 24), second slide valve (30; column 3 line 25), test reservoir (34; column 3 line 26), inlet and outlet stoppers (54 and 56; column 3 line 39-40), conductive palladium coated microsphere (36; column 3 line 54, and column 4 lines 41 through 60), a "conductive (sic) foraminous grid" (38; column 3 line 56) which do not even exist in the present invention.

The Applicant's invention, '765, does not read on Patterson's invention, as the Examiner suggests.



131. The Office leads away from the above-entitled invention and disingenuously states,

*"(The Applicant previously said) 'The claimed invention minimizes electrolysis unlike Patterson, the claimed invention methodically controls temperature unlike Patterson, and there are some reduction in accuracies in the experimental results from Patterson's inventions. The features cited by the Applicant are non-limiting because they not recited in the claims.*

**THE TRUTH -Patterson does not involve a catastrophic diffusion flux**

This statement by the examiner is false for many reasons.

Applicant also respectfully notes that this was discussed in the previous Communication with the Examiner on pages 23 through 28 and page 39. Where is the Examiner's response to the arguments?

Patterson was again discussed by Applicant in the Communication of Applicant dated 5/5/03 including therein on pages 27-34. Where is the Examiner's substantive response?

First, actually, the issue of minimizing electrolysis is in the claims of the another of Applicant's inventions to which he does refer ['976].

Second, Patterson strives for "electrolysis" as the titles, description and claims of Patterson 1, and 2 admit. However, it is NOT desired in the present invention which is operated through control of the optimal operating points (infra).

Third, the present invention does claim a change in loading after initial loading. Patterson does not have a change in the loading after loading because the Office would have cited it. In fact, the Office has previously admitted to a precharging phase,

*"Patterson refers to .. a "loading stage" during which a relatively low level current (0.05 amps) is introduced across the electrodes 15 and 16. During the initial loading, palladium surface of the microspheres (36) Any absorbs and combines with the hydrogen isotope, i.e., it becomes loaded. This loading takes about two hours under a current flow through the cell of about 0.05 amps (e.g., see column 6, lines 6+)."*

Fourth, the features of the present invention ARE recited in the claims. Patterson's invention which is a simple electrolytic cell consisting of beads is not the same as a two-stage process of the present invention's original specification and claims. '765 reads on a two-stage process involving loading of hydrogen into a metal

electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal. The material of Applicant's invention, '765, does not read on Patterson's a simple electrolytic cell consisting of beads, as the Examiner inaccurately states.

132. The Office continues to misstates the Patterson invention, by stating,

*"Following the loading stage, the current level between electrodes 15 and 16 is then incrementally increased. During this time, the temperature of the electrolyte is both monitored and controlled by increasing the flow rate of electrolyte (59) therethrough (see column 6, lines 1+). Note that the palladium-coated microspheres are immersed in the electrolyte and any change in the electrolyte temperature inherently changes the temperature of the material."*

**THE TRUTH - Controlling temperature of the electrolyte is NOT the same as this invention**

Although discussed in the previous communication from the Applicant, including on pages 23-28, the Examiner has minimized and ignored the critical errors of Patterson.

The material of Applicant's invention, '765, does not read on Patterson's a simple electrolytic cell consisting of beads, as the Examiner falsely suggests. First, controlling temperature of the electrolyte for flawed flow calorimetry is NOT the same as methodically controlling device temperature. Patterson's invention uses a flow calorimetric system. Patterson uses his pump (18 in Patterson; column 3 line 11), reservoir (32; column 3 line 12), slide valve (22; column 3 line 24), second slide valve (30; column 3 line 25), test reservoir (34; column 3 line 26), inlet and outlet stoppers (54 and 56; column 3 line 39-40) to effect temperature for different purpose, and by different process than the present invention.

Second, in Patterson, there is temperature is control through the flow rate of electrolyte through rudimentary beads. Corroborating this, Patterson admits that the temperature of the electrolyte is both monitored and controlled by increasing the flow rate of electrolyte (59) therethrough (see column 6, lines 1+).

Third, attention is directed to the fact that in Patterson, unlike the present invention, there is temperature is control through the flow rate of electrolyte as opposed to the catastrophic method covered in the present invention, and uses a simple two electrode system with rudimentary beads. The Applicant's invention, '765, does not read on Patterson's invention, as the Examiner suggests.

**THE TRUTH - Patterson controlling flow rate to control temperature involves Patterson's temperature measurement vs. this Inventions Method**

133. The Examiner ignores that Patterson is NOT this invention, and that controlling an electrolyte temperature is not changing with control the temperature of a loaded metal after loading. The Examiner has now broached dishonesty. Patterson discloses an electrolytic cell consisting of cathodic beads located in a flow calorimetric system. Patterson uses a pump (18 in Patterson; column 3 line 11), reservoir (32; column 3 line 12), slide valve (22; column 3 line 24), second slide valve (30; column 3 line 25), test reservoir (34; column 3 line 26), inlet and outlet stoppers (54 and 56; column 3 line 39-40), conductive palladium coated microsphere (36; column 3 line 54, and column 4 lines 41 through 60), a "conductive (sic) foraminous grid" (38; column 3 line 56). Patterson's invention is a simple electrolytic cell consisting of beads and Patterson claims said rudimentary electrolytic cell filled with beads of mixed metals, arranged as cathodic beads. Patterson strives for "electrolysis" as the titles, description and claims of Patterson 1, and 2 admit.

All of this is quite different from THIS INVENTION.

**PATTERSON ERROR -VERTICAL CALORMETRIC ERROR**

134. Although not brought up by the Examiner, the Patterson invention suffers from very bad problems about which the Applicant of the above-entitled application has published in peer reviewed articles. Patterson's numbers are in error because Patterson ignores and misinterprets thermal buoyancy. The Patterson microsphere-CETI system did not work at the superlative levels reported (ie. kilowatts). This was because it was designed to be a flawed vertical flow system [confer Swartz, M, "Potential for Positional Variation in Flow Calorimetric Systems", Journal of New Energy, 1, 126-130 (1996) and Swartz, M, "Improved Calculations Involving Energy Release Using a Bouyancy Transport Correction", Journal of New Energy, 1, 3, 219-221 (1996)]. There is a major potential error of

vertical flow calorimetry - Bernard instability. Vertical low-flow calorimetry will give a false reading to anyone using it if Bernard instability [bouyancy factors] are ignored. Therefore, many scientists knowledgeable of the state-of-the-art prefer static calorimetry of uncalibrated vertical flow calorimetry such as Patterson uses.

In Patterson, the experimental setup is flawed in a way that diminishes its accuracy and utility. Simply put, Patterson ignores its dependance upon a vertical flow system and its magnification of the actual result when Bernard instability is not considered. Patterson's equation ignores the verical bouyancy flow errors. Corroborating this indelibly, in Patterson-3, Table 1 reveals that the delta-T (row 1, column 7) is - 0.3. This cannot be correct because warm water always rises. Patterson should have used the zero amount to correct the output to derive a semiquantitative derived value from the observed instead of magnifying the output.

The Patterson, invention is flawed, and there is a failure of adequate calibration in the initial studies as the cited patent, Patterson-3, reveals. The result is that Patterson's data is flawed. The mere plugging of numbers into a formula does not necessarily mean that the derived value is accurate unless the formula(e) applies to the experimental setup. This was discussed in Swartz, M, " Potential for Positional Variation in Flow Calorimetric Systems", Journal of New Energy, 1, 126-130 (1996) and Swartz, M, "Improved Calculations Involving Energy Release Using a Bouyancy Transport Correction", Journal of New Energy, 1, 3, 219-221 (1996). Patterson has inaccurate data because it missinterpreted the amount of heat because of thermal bouyancy and Patterson's error of omission of considering it in Patterson's vertical flow system. In Patterson, the mere plugging of numbers into a formula used in a flawed way diminishes its derived value and accuracy.

In summary, attention is directed to the fact that in Patterson, unlike the present invention, there is temperature is control through the flow rate of electrolyte as opposed to the catastrophic method covered in the present invention, and uses a simple two electrode system with rudimentary beads. '765 contains many additional critical features, components, etc., which are not found in Patterson or any of they other references. These features enable Applicant's invention to function differently from the cited references and to produce a different result.

## LAW

135 Applicant respectfully notes that this was discussed in the previous Communication but has not been addressed with specificity and precision. These patents are very different. They do not disclose a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal of the cathode. The material of Applicant's invention, '765 does not read on the Examiner's cited art. Furthermore, it is improper to compare the cited art to the present invention for several reasons which the Applicant already discussed with the Examiner, but to which the Examiner has NOT yet completely and substantively responded. In particular, as to Section 102 rejections, it is stated in M.P.E.P. 706.2 that:

**'The distinction between rejections based on 35 USC 102 and those based on 35 USC 103 should be kept in mind. Under the former, the claim is anticipated (emphasis added) by the reference.'**

136. In this same connection, The Court of Customs and Patent Appeals said in *In re Arkely, Eardley and Long*, 172 U.S.P.Q. 524, 526 (CCPA, 1972):

**'It is to be noted that rejections under 35 USC 103 are proper where the subject matter claimed 'is not identically disclosed or described'(emphasis by the Court) 'in the prior art,' indicating that rejections under 35 USC 102 are proper only when the claimed subject matter is identically disclosed or described in 'the prior art'.'**

137. Therefore, given the above, the independent claims, and hence all claims, distinguish over the reference cited under Sec. 102. Thus, the present invention, a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden rapid ('catastrophic') flow of the loaded hydrogen within the metal, is novel, is not obvious, and does distinguish from all previous art.

Given the above, the Examiner should be fair, should answer the Declarations, should thereby answer the previous Orders of the Board, and should answer with specificity all explicitly discussed issues herein and in the previously submitted but substantially ignored response, or after reconsideration with respect to novelty (Sec. 102), allowance is respectfully requested by the Applicant.

Given the above, reversal of Claims 1-10, 12-19, 21 and 22 are rejected under 35 U. S. C.102(b) with respect to novelty is respectfully requested by the Appellant.

### **PURPORTED INDEFINITENESS - 35 USC §112 second paragraph**

138. The Office inaccurately states the claims are vague and indefinite. The Examiner is disingenuous. Applicant respectfully notes that this was discussed in the previous Communication on 12/3/02 with the Examiner on pages 14 through 16 and also pages 91 through 95 where it was also discussed through the prism of those skilled-in-the-art. Furthermore, it was again discussed by Applicant in the Communication of Applicant dated 5/5/03 to the Examiner's missive (with new arguments) of 3/20/03, including therein on pages 8 and 9.

Notwithstanding the above, it is disingenuous for the Examiner to claim there is indefiniteness. "... (I)ndefiniteness in claim language is of semantic origin" [In re Hammack, 427 F.2d 1384 n.5, 166 USPQ 209 n.5 (CCPA 1970)] because indefiniteness is the opposite of definiteness. Definiteness is a characteristic of a patent claim in which claim language makes the scope of the claim clear to a person skilled in the art to which the invention pertains [MPEP 2173, MPEP 2173.02, MPEP 2173.05(a)]. Pursuant, to MPEP 2173, Applicant claimed with particularity, and did point out and distinctly claim the invention. Applicant's claims are therefore definite because the claims are precise, clear, correct, and unambiguous to a person skilled-in-the-art and, therefore, there was definiteness. The specification did conclude claims particularly pointing out and distinctly claiming the subject matter. Applicant has fully complied with the definiteness requirement of the second paragraph of 35 U.S.C. §112. The original specification and claim adequately presented the claimed invention so that an artisan, or those skilled in the art, could practice it without undue experimentation [In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed.Cir.1988)].

In this case, the products are obviously nuclear products and heat. Even the Examiner admitted such elsewhere in his communication. Even the affiants testified as such.

## **LAW**

### **DEFINITENESS CORROBORATED BY DECLARANTS**

139. The Examiner has not responded to the fact that Definiteness is proven by way of Applicant's previously-submitted expert testimony [Ex parte Gray, 10 USPQ2d 1922, 1928 (Bd. Pat. App. & Inter. 1989)], including Declarations and Amicus Curiae Briefs. The Examiner purports that if an Affiant has actual knowledge of the invention, then said affiant is "not disinterested". This is absurd, illogical, unlawful, and not ethical. The simple proof of definiteness is that there has never been a problem for the previous Examiner of '970 in this regard, or more importantly with the Declarants who are skilled-in-the-art or even with the court [In re Swartz 00-1107 and In re Swartz 00-1108]. Therefore, this Examiner must accurately discuss the invention as it is actually taught in the original specification and claims. The claimed invention should be the focus of the definiteness requirement.

### **DEFINITENESS SUPPORTED BY THE CLAIMS**

140. The Examiner has not responded to the fact that there is definiteness because the pending claims must be given the broadest reasonable interpretation consistent with the specification. [In re Prater, 415 F.2d 1393, 162 USPQ 541 (CCPA 1969); also MPEP Section 2111 - Section 2111.01] and the specification stated the meaning of the terms in the claims. [In re Zletz, 893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989)]. Furthermore, there is definiteness because pursuant to 2173.05(a) the meaning of every term used in the claims was apparent from the prior art, cited art, and from the specification and drawings at the time the application was filed. There is definiteness because the claims must each be given the broadest reasonable interpretation consistent with that which one who is skilled-in-the-art would reach [In re Morris]. In this case, it is corroborated by both the Declarations, Amicus Briefs, and peer-reviewed publications.

### **DEFINITENESS SUPPORTED BY THE OFFICE RULES**

141. The Examiner has not responded to the fact that there is definiteness consistent with Office Rules. The preamble of claim 1 recites the purpose of the process, and the process steps are able to stand alone (MPEP 2111.02). Pursuant to 2173.05(b), the fact that claim language may not have been precise cannot automatically render the claim indefinite under 35 U.S.C. 112, second paragraph [Seattle Box Co., v. Industrial Crating & Packing, Inc., 731 F.2d 818, 221 USPQ 568 (Fed. Cir. 1984)].

### **DEFINITENESS SUPPORTED BY PROBATIVE REFERENCE**

142. The Examiner has not responded to the fact that the peer-reviewed reference support definiteness [Swartz (1992), Swartz (1994A), SWARTZ (1994B), Swartz (1997A), Swartz (1997B), SWARTZ (1998A)] which prove understanding by one skilled in the art [Atmel Corp. v. Information Storage Devices Inc., Fed. Cir., No. 99-1082, 12/28/99].

### **DEFINITENESS PROVEN BY OTHER REJECTIONS**

143. Regarding the rejection of Claims 1-10, 12-19, 21 and 22 under 35 U.S.C. 112 second paragraph, Applicant notes to the Examiner that there has to have been definiteness with respect to the present invention because it is a Continuation and because the Examiner could not have made the previous rejections under 35 U.S.C. 102 had the invention truly been without definiteness.

144. In summary, there IS definiteness because acceptability of the claim language depends on whether one of ordinary skill-in-the-art would understand what is claimed, and that is confirmed by the light of the specification, the Declarations, the Amicus Briefs, and the peer-reviewed publications [Ex parte Porter, 25 USPQ2d 1144, 1145 (Bd. Pat. App. & Inter. 1992)]. The invention at issue in this case, '765, is claimed by Claims 1-10, 12-19, 21, and 22, and is generally speaking a two-stage process involving loading of hydrogen into a metal electrode such as palladium, including a first stage of electrode loading, followed by, a second stage of sudden



rapid ('catastrophic') flow of the loaded hydrogen within the metal and means to extract product using magnetic field inhomogeneity, based on differential magnetic susceptibilities.

Given this, the Examiner has not responded to the fact that 35 U.S.C. 112, second paragraph requires the Examiner had to provide reasons why the terms in the claims and/or scope of the invention are unclear

**"in a positive and constructive way, so that minor problems can be identified and easily corrected, and so that the major effort is expended on more substantive issues."**

Appellant explicitly wrote that if there are other issues with Claims 1-10, 12-19, 21, and 22, the Examiner was asked to identify with specificity and clear explanation what the rejection is based on [Ex parte Ionescu, 222 USPQ 537,539 (Bd. App. 1984)]. He has yet to speak precisely and substantively.

145. Therefore, all definiteness issues were addressed. Therefore, this rejection should be reversed.

## Argument Regarding 35 USC §112 second paragraph

### EXAMINERS ERRORS INCLUDING ON PURPORTED NEW MATTER

146. The Examiner has made four additional errors regarding the above that must be clarified, not only for correction, but to further illuminate the agenda of the Examiner. The Examiner disingenuously states,

*"Applicant addressed this problem by deleting references to "fuel cells", replacing "hydrogen storage" with "hydrogen loading" and deleting "pressure" in the term "pressure-loaded" metals in the statement of relevance of the claimed invention. This change would still not qualify the current application as a continuation of S/N 09/760,970 because there are still significant differences in the subject matters..."*

#### **THE TRUTH - Not New Material**

The Examiner is incorrect for several reasons. First, the addition of hydrogen storage, hydrogen loading, pressure, and pressure loading are not new material. Instead, these matters were discussed at length in the original specification and claims of which the above-entitled invention is a continuation, and they were also discussed at length in the record of that patent application. They were also discussed in the submitted declarations (systematically substantively ignored to this point in time). The alleged new material was already discussed in the previous communication from the Applicant to the Examiner, dated 12/3/02, on page 13. Where is the Examiner's substantive response?

Furthermore, it was again discussed by Applicant in the Communication of Applicant dated 5/5/03 including therein on pages 5 through 7. Where is the Examiner's substantive response? The Examiner has ignored the Applicant's detailed Arguments about this.

The Office has not shown good-faith execution of MPEP 707.07(j) and MPEP 706.03(d) following duly-served requests for entry of such suggestions.

147. The Examiner states,

*"The parent application refers to "electrochemical nuclear fusion in or about metals" that is different from the broader subject matter of "electrochemical reactions in or about metals" in the current application.*

#### **THE TRUTH - Not New Material**

The Examiner is incorrect for several reasons. First, electrochemical nuclear fusion is the same as electrochemical reactions in or about metals which were

discussed in the original application and claims (' 970) and the above-entitled application (' 765). Second, these reactions are not new material since they were in both applications. Furthermore, the identical nature of the two descriptions is not new material, because it was an ' 970.

148. The Examiner states,

*Also, the parent case specifically highlights the relevance of the claimed invention to "cold nuclear fusion in pressure loaded metals" whereas the current case deletes the "cold" term and refers only to "nuclear fusion in loaded metals." Accordingly, the current application cannot claim priority to the 9/17/91 filing date of the S/N 09/760,970."*

**THE TRUTH - Not New Material**

The Examiner is incorrect for several reasons. First, cold nuclear fusion in loaded metals is the same as cold nuclear fusion in pressure loaded metals. The Examiner has given not a single reason for his misinterpretation of this matter and those above (super). Second, these are not new material by are from the original application and the specification and claims (' 970).

149. The Examiner states,

*"Change from "applied magnetic field" to "applied spatially inhomogeneous magnetic field", shown as underlined in amended claim 2."*

**THE TRUTH - Not New Material**

The Examiner's claim that "homogeneous" magnetic fields, "spatially homogeneous", "redistribution of isotopic fuel into said material", are new is absolutely false. First, these could hardly be new material because they were discussed in the patent application of which the present application is a continuation ('970), and the present application which discussed this. The concepts and words were used in the original application. Second, proving this are the several Declarations which were submitted previously.

Third, there are orders (Exhibit "C") for the Examiner to address the declarations of Dr. Swartz and Strauss which discuss exactly this. How could it be new? And where is the response? Where is the evidence that the Examiner has ever addressed any of the declarations substantially? Therefore, the Applicant requests the Examiner reconsider this issue.

## **ARGUMENTS - Claim Rejections under 35 USC 101 Rejection**

150. The Examiner, ignoring the Evidence, the Declarations, and the obvious importance of energy, states:

*"9.2 Claims 1-10, 12-19,21 and 22 are rejected under 35 U.S.C.101 because the claimed invention as disclosed is inoperative and therefore lacks utility."*

These statements, allegations, and conclusion are absolutely inaccurate, unfair, and disingenuous. Claims 1-10, 12-19,21 and 22 are wrongly rejected under 35 U.S.C. 101. There have been no valid "reasons" in section 6 or anywhere else by the Examiner (who must discuss other art and destroy Evidence).

First, the Examiner is wrong because Title 35 U.S.C. 101 provides for the issuance of a patent to a person who

**"invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title." [450 U.S. 175, 182].**

The present invention is a two-stage method which involves a first stage of electrode loading, and then, a second stage of sudden rapid ("catastrophic") flow of hydrogen within the metal.

Thus, Claims 1-10, 12-19,21 and 22 are compliant with 35 U.S.C. 101 because the claimed invention as disclosed is operative and has utility. Pursuant 35 U.S.C. 101, Applicant is entitled to a patent for his new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement there.

151. Second, and importantly: Why has the Examiner not replied to any of the Applicant's previous comments regarding these very same issues involving 35 U.S.C. §101?

The Examiner has already been completely refuted already, and was shown to be completely wrong in drawing the conclusions that he does as they are seeped in bias and poorly thought out reasoning. Every single misstatement, disingenuity, and false statement made by the Examiner in the FINAL, was already addressed and rebutted. More importantly, the issues were addressed previously in Applicant's previous Response to the Office. However, the Examiner ignored the timely-submitted Responses and arguments.

152. Third: why has the Examiner not given any specific or precise, serious and honest reason except repeating generalized statements for things he already said before? Because he cannot. Applicant's arguments were not refutable, so they were ignored and the Evidence destroyed/censored/redacted by the Examiner Palabrica.

153. NOTA BENE: Attention is directed to the simple fact that the preposterous rejection by the Examiner has only been made by him ignoring and/or destroying/removing/blackening out Evidence, while substituting disingenuous statements. The fact remains that the utility has been demonstrated by the Declarations and affidavits corruptly destroyed/removed/blackened out by Examiner Ricardo Palabrica.

### **THE APPLICANT COMPLIED COMPLETELY**

154. The Applicant's Communication to the Examiner dated 12/3/2002, demonstrated that the Applicant, in the above-entitled application, fully provided a description which will allow others to build an apparatus that works, and will deliver the useful result. Applicant has made a documented *prima facie* case specific and substantial credible utility, and has given open demonstrations at the Massachusetts Institute of Technology, and oral reports to the US Navy and DTRA and other agencies, whose memoranda and documentation has been shared with the Office.

155. In Applicant's Communication to the Examiner dated 12/3/2002, the Applicant has specified exactly how he demonstrated that he has described in his application how the above-entitled invention works and is useful.

156. In Applicant's Communication to the Examiner dated 12/3/2002, the Applicant has specified exactly how he provided a description which will allow others to build an apparatus that works, and will deliver said useful result.

157. In Applicant's Communication to the Examiner dated 12/3/2002, the Applicant specified exactly how he characterized the above-entitled invention in claims which are clear and which avoids describing anything previously described in the prior art.

158. In Applicant's Communication to the Examiner dated 12/3/2002, the Applicant provided Evidence in the form of publications that rebut the Office. They have been ignored by the Examiner. They were submitted and some listings have been ignored and corruptly removed by black-lining out the *pro se* Applicant's required, cited, and submitted reference) from the Forms 1440 with no substantive reason.

159. In Applicant's Communication to the Examiner dated 12/3/2002, the Applicant provided Evidence in the form of Declarations which rebut the Office. They have been ignored by the Examiner. They were submitted and some listings have been ignored and/or removed from the Forms 1440 with no substantive reason.

The nature of the invention, along with introduction of some of the Declarations, was discussed in the previous communication from the Applicant to the Examiner, dated 12/3/02, on page is 11 and 12. The role of the optimal operating point in the operability of this invention was discussed in the previous communication from the Applicant to the Examiner, dated 12/3/02, on pages 59-60 and 66.

Furthermore, all of the above issues were again discussed by Applicant in the Communication of Applicant to the USPTO dated 5/5/03, including therein on pages 77 through 85.

### **Removed/Destroyed/Ignored/Blackened Out Evidence Demonstrates Utility**

160. NOTA BENE: The unfair rejection for putative "lack of operability" or "enablement" under 35 U.S.C. §112, ¶1 and "lack of utility" under 35 U.S.C. §101 has only been made by ignoring the original specification and claims, by ignoring the timely-submitted un rebutted Declarations, by ignoring scores of Exhibits and references, and by ignoring the Office's own rules, and thus by the Office having created an arbitrary two-tier "standard of review" for patentability.

**☑ UNCONTESTED FACT: Peer-Reviewed Publications Demonstrate Utility**

**UNCONTESTED FACT: Utility Confirmed by Publications**

161. The publications submitted by the Applicant are sufficient to convince one of ordinary skill in the art of the invention's utility (Swartz, 232 F.3d at 864).

162. These peer-reviewed publications (like the timely submitted Declarations) establish facts. Such Evidence consisting of published peer-reviewed scientific articles which prove Applicant was correct on the filing date of the application, and does meet the bar of enablement [In re Hogan, 559 F.2d 595, 60S, 194 USPQ 527, 537 (CCPA 1977)].

163. The false statements by Dr. Palabrica about the purported lack of utility of the present invention have only been made in the light of the relevant peer-reviewed publications being corruptly destroyed/removed/blackened out by Examiner Ricardo Palabrica.

164. The utility of the present invention has been demonstrated by the peer-reviewed publications corruptly destroyed/removed/blackened out by Examiner Ricardo Palabrica.

165. The false statements by Dr. Palabrica have been made only by ignoring the submitted peer-reviewed publications. The peer-reviewed published papers refute the Office.

166. These peer-reviewed publications (like the timely submitted Declarations) establish facts. The published peer-reviewed scientific articles prove Applicant was correct on the filing date of the application. The publications submitted by the Applicant are sufficient to convince one of ordinary skill in the art of the invention's utility (Swartz, 232 F.3d at 864).

167. A second group of peer-reviewed published papers expose the Examiner's antiscientific discrimination regarding "cold fusion". These peer-reviewed publications show that growing numbers of the scientific community consider the positive results of Appellant's work as being operative and of utility. That includes the American Nuclear Society and the American Chemical Society. It is these individuals in the scientific community who actually research and write the scientific technical papers which undergo peer-review, file patent applications, and attend the Conferences who accurately evaluate inventions, products and publications. This community is defined as those "skilled in the art". They disagree with the Examiner's notion as to the operability and utility of this invention.

These peer-reviewed publications were submitted by the Applicant to show that growing numbers of the scientific community consider the positive results of Appellant's work as being operative and of great utility. They disagree with the Examiner's notion that clean, efficient energy production is of no utility.

168-170 Withheld for federal court - first circuit.

171. By contrast, the Examiner Palabrica swears on his honor that there is no utility for energy or tritium. Of course, he is not truthful yet again.

**☑ Invention's Utility Confirmed by DTRA, DARPA, The US Navy, MIT**

172. The facts remain that this Examiner's statements above are simply not true. DTRA disagrees. DARPA disagrees. The US Navy disagrees. Thousands of scientists disagree. The literature extensively supports the "existence" of the "cold fusion" effect(s) with indelible experimental data. Lattice assisted nuclear reactions [LANR, previously called "cold fusion" regarding one of the less efficient methods of achieving them] are real, and offer a clean, efficient potential new source of energy production. Two decades of LANR R&D have confirmed excess heat production, and other clearly nuclear phenomena, using electrolysis and other gas loading techniques.



Requirements for success include incubation time, high loading of >90% PdDx, and other requisite conditions difficult to achieve. Several types of LANR now exist, as well as LANR metamaterials, and several types of triggering and control methods. In LANR, excess heat and helium-4 are the usual products, but charged particles, tritium, and the sequelae of neutrons can be sometimes detected. Excess power gains up to 200-400%+ have been reported.

Confer Exhibit "B" which was previously sent and destroyed/removed/blackened out corruptly by the disingenuous Dr. Ricardo Palabrica.

In said Dec. 12, 2006, the Defense Threat Reduction Agency Ft. Belvoir, Virginia, Report the Advisory Board Findings and Recommendations say for CF/LANR/LENR:

**"There is good evidence of excess heat and transmutation."**

173. The publications submitted by the Applicant are sufficient to convince one of ordinary skill in the art of the invention's utility (Swartz, 232 F.3d at 864). These peer-reviewed publications (like the timely submitted Declarations) establish facts. Such Evidence consisting of published peer-reviewed scientific articles which prove Applicant was correct on the filing date of the application, and does meet the bar of enablement [In re Hogan, 559 F.2d 595, 60S, 194 USPQ 527, 537 (CCPA 1977)].

#### **UNCONTESTED FACT: Declarations Demonstrate Utility**

##### **☒ Invention's Utility Confirmed by Declarations**

**UNCONTESTED FACT: Utility is Confirmed by the Declarations**

174. The utility is confirmed by the unrebutted, long-ignored, often-removed-from-the-file-folder, Declarations.

NOTA BENE: Applicant has, over and over, completely undertaken the full burden of coming forward with his rebuttal Evidence as required [In re Oetiker, 977 F.2d at 1445, 24 USPQ2d at 1444]. The Declarations were, and are, submitted with discussion of how their statements have relevance to the current application, and the behavior of the Office, and why said statements pertain to, and rebut, the Examiner's rejections.

In this case, the CONTROL of a LANR reaction is termed control of its "activity". That factor is of great importance to those skilled in the art, and those who need energy. Dr. Palabrica disagrees. For his portfolio's future, clean efficient energy must be stopped, now, by all means.

175. The above-entitled invention has obvious utility as a two-stage method which involves a first stage of electrode loading, and then, a second stage of sudden rapid ("catastrophic") flow of hydrogen within the metal.

176. Utility is a fact question, and proof of utility is sufficient if it is convincing to one of ordinary skill in the art or if it meets at least one stated objective. Once again, the Applicant has undertaken the full burden of coming forward with his evidence before the Final, as required [In re Oetiker, 977 F.2d at 1445, 24 USPQ2d at 1444]. The Declarations have been submitted with discussion of how their statements have relevance to the current application, and the behavior of the Office, and why said statements pertain to, and rebut, the Examiner's rejections.

The Declarations and Amicus Briefs demonstrate that "measurement" of activity is of utility. Therefore, CONTROL of LANR "activity" obviously has greater utility.

177. The Declarations show precisely where the Examiner has been mistaken and disingenuous (despite correction, including by the DIA).

178. The Declarations demonstrate that the original specification and claims clearly define subject matter of considerable utility. Said Declarations constitute a *bona fide* case, and completely address the Examiner's points of rejection.

179. Proof of utility should be judged either by those using the invention or those skilled in the art. These are scientists who research and actually write the current scientific technical papers which undergo peer-review, file patent applications, and attend international conferences. They absolutely disagree with the Examiner on this.

180. Utility is a fact question, and proof of utility is sufficient if it is convincing to one of ordinary skill in the art or if it meets at least one stated objective. The Declarations and Amicus Briefs demonstrate that "measurement" of activity is of utility. Therefore, CONTROL of LANR "activity" obviously has greater utility.

181. The Declarations and Amicus Briefs show precisely where the Examiner has been mistaken and disingenuous (despite correction, including by the DIA).

182. The Declarations demonstrate that the original specification and claims clearly define subject matter of considerable utility.

183. Said Declarations constitute a *bona fide* case, and completely address the Examiner's points of rejection.

184. Once again, the Applicant has undertaken the full burden of coming forward with his evidence before the Final, as required [In re Oetiker, 977 F.2d at 1445, 24 USPQ2d at 1444]. The Declarations have been submitted with discussion of how their statements have relevance to the current application, and the behavior of the Office, and why said statements pertain to, and rebut, the Examiner's rejections.

185. NOTA BENE: The Affiants have been sworn, but the Examiner has not. Attention of the federal investigatory agencies and the federal court are directed to this matter given the seemingly ubiquitous disingenuity and systematic discrimination under color of law, complicated by removal of due process on an energy patent application made SPECIAL by the Board of Patent Appeal while the United States of America has thereafter been at war involving energy.

186. The Examiner has elected to continue to defy the Board of Patent Appeal --including its spirit of intention-- which previously Ordered the Examiner to address the Declarations. The Declarations are ignored even in the light that there is an Order from the Board of Patent Appeal to address them. The Remand stated,

*"Further, the examiner should explain why these 'filings' and 'references' are inadequate in evidentiary weight, to overcome the evidence proffered by the examiner."*

May it please the Board, that it is brought to the Boards attention, giving it opportunity to address the matter, that instead of responding to the Declarations, and the filings and references (from the DIA, DTRA, US NAVY, NASA, American Nuclear Society, American Chemical Society), the Examiner, Dr. Ricardo Palabrica and his Supervisors, have destroyed/removed/blackenedout/ignored the same; and then hid the Appeal Brief from the Board of Patent Appeal from 2004 to 2012. That is corruption at a level consistent with treason against the United States of America. Such behavior would never be tolerated in medicine or science or by a jury composed of common people.

187. In summary, the utility of the above-entitled invention is confirmed by the unrebutted Declarations and affidavits corruptly destroyed/removed/blackened out by Examiner Ricardo Palabrica. Simply put, the false statements by Dr. Palabrica have been made only by ignoring the submitted Declarations. The Declarations contain factual statements which detail rebuttals to the Office and support the Applicant's position. The Declarations constitute significant reputable evidence of record and a *bona fide* case which is quite convincing and persuasive to one who is open-minded and not biased. Applicant's Declarations show precisely that the Examiner is inaccurate on issues of operability, refute all of his points of rejection, and substantially, completely and fully address and precisely dispute all of the Examiner's points of rejection and all matters criticized by the Office. They also prove the Office's hostile and discriminatory notions are wrong in this matter.

The Declarations document Applicant's demonstrations of the Applicant's invention, including one open to the public, at the Massachusetts Institute of Technology [Cambridge, MA] for a week before hundreds of people. They support that the invention DOES operate as indicated. They prove that the specification adequately described the subject matter recited in the claims and demonstrate that it operates as stated. The Declarations prove that the adequately written description requirement is met and demonstrate that the teachings of this invention are sufficient for one skilled-in-the-art to have understood the inventor to have been in possession of the claimed invention at the time of filing. The Declarations demonstrate validation, operability, considerable utility, and therefore enablement of the present invention and Applicant's claimed subject matter. They indicate that the teachings in

the original specification, claims, and drawings are sufficient and convincing to one of ordinary skill in the art -- heralding operability and conformity and compliance with the 35 U.S.C. §112, §1 (first paragraph) and the "enablement" requirement.

188. **NOTA BENE:** The rejection has been made **ONLY** by ignoring the timely-submitted un rebutted Declarations, by ignoring scores of Exhibits and references. The Examiner has destroyed/removed/blackenedout and **FAILED TO CONSIDER TIMELY SUBMITTED Evidence** to make these false statements.

### **Open Demonstrations Demonstrate Utility**

189. The above false statements by Dr. Palabrica have been made only by ignoring Applicant's open demonstration successes. While the Examiner has been tampering and destroying Evidence and previously Arguments, the *pro se* Applicant was giving his second (2nd) **OPEN DEMONSTRATION** at the Massachusetts Institute of Technology (RLE and EE Building) during January, February and March, 2012. Here are some excerpts, and URLs for Dr. Palabrica to check out. How it must hurt him to not have ability to destroy this Evidence, too.

Fusione fredda: successo per un test effettuato al MIT

URL

=

<http://www.greenstyle.it/fusione-fredda-successo-per-un-test-effettuato-al-mit-7376.html>

2 febbraio 2012 - Guido Grassadonio

**"La storia della fusione fredda si incrocia molto spesso con quella del prestigioso istituto di ricerca statunitense del MIT. Quando nel 1989 Martin Fleischmann e Stanley Pons annunciarono al mondo intero che erano riusciti a ottenere tale reazione nucleare, il dibattito che ne scaturì e che si concluse con la bocciatura senza appello di questa invenzione, passò anche dai risultati negativi di alcuni test svolti proprio al Massachusetts Institute of Technology.**

**Come leggiamo su Wikipedia, solo successivamente Eugene Mallove, allora capo dell'ufficio stampa dell'istituto, ammise che alcuni grafici afferenti a quei test furono alterati senza ragione, probabilmente per evitare che lo studio delle reazioni LENR rubasse scena e fondi alle ricerche sul nucleare classico.**

**Il fatto che in questi giorni si parli della riuscita di una prova riuscita proprio al MIT su un reattore a fusione fredda potrebbe essere archiviato sotto la voce**

**“legge del contrappasso”. Il reattore in questione non è, per essere chiari, né quello del duo Fleischmann-Pons (di cui però replica la reazione), né tanto meno l'E-Cat di Andrea Rossi e Sergio Focardi – anche se è difficile non avvertire la presenza del fantasma di entrambi in questa vicenda.**

**Ad essere stato testato è stato il reattore che da anni stanno mettendo a punto quelli della JET Energy, chiamato: Lattice-Assisted Nuclear Reaction (LANR). Il nome deriva dal fatto che sarebbe proprio un particolare lattice costruito a partire da nanotecnologie a indurre la reazione nucleare a basse temperature. A reagire, sono due atomi di idrogeno (Deuterio e Trizio) che si fondono in un isotopo stabile dell'Elio. Si tratta, come detto, della stessa reazione scoperta da Fleischmann-Pons; diversamente, l'E-Cat di Andrea Rossi catalizzerebbe una reazione a bassa energia fra idrogeno e nichel, ottenendo del rame.**

**L'energia prodotta dal reattore al MIT sarebbe 10 volte superiore a quella immessa per attivarlo. Inoltre, diversamente rispetto al caso di Rossi, il prof. Hagelstein avrebbe fornito delle basi scientifiche in grado di spiegare l'accaduto.**

**Ad essere onesti, non si tratta del primo esperimento della JET Energy al MIT: già ad agosto del 2003, quindi quasi nove anni fa, ne venne effettuato uno con successo. Il successo mediatico che il tema sta avendo ai nostri giorni, grazie ad attori come Andrea Rossi o la Defkalion, rende però l'avvenimento estremamente interessante. Che la fusione fredda sia una possibilità reale per il nostro futuro? Come nel caso del motore PlasmERG è presto per rispondere. Di certo la nostra società ha un disperato bisogno di nuove fonti energetiche e sembra aggrapparsi a queste ricerche per vedere un po' di luce per il proprio futuro."**

[Guido Grassadonio, "Fusione fredda: successo per un test effettuato al MIT", <http://www.greenstyle.it/fusione-fredda-successo-per-un-test-effettuato-al-mit-7376.html>, 2 febbraio 2012]

175. Cold Fusion is Here, It's Real, and its Time has Come -

URL

<http://www.opednews.com/populum/page.php?f=Cold-Fusion-is-Here-It-s-by-steve-windisch-120202-446.html#startcomments>

Steve Windisch 2-2012

**"Over the last several years, there have been many reports around the world about important multiple successes with what is popularly known as "Cold Fusion", or more properly what is now known as "Low-Energy Nuclear Reactions" (LENR). The latest was from January 31, 2012 at M.I.T. in Cambridge, Massachusetts. Professors Peter L. Hagelstein and Mitchell Swartz gave a symposium and short class where a successful 2-day LANR/ LENR/ Cold Fusion experiment was done publicly that produced at least 10 times the energy out, than was used.**

This event was especially significant, since it was some professors and administration officials at M.I.T. who were leading the anti-cold fusion attack wave in the early 1990's. Pro-CF proponents, such as the late Dr. Eugene Mallove of Harvard and M.I.T. who wrote books and articles on LENR before his murder in 2004, have theorized that the vehement attacks, derision, and accusations publicly made about it then were at least partially about M.I.T. and others trying to protect the large amount of government funding they received for "hot fusion" research; which would soon become utterly obsolete if cold fusion were a reality. LENR research is dozens of times less expensive to perform than hot fusion research, and much less ongoing funding is needed to maintain a laboratory. No one knows for sure the real reasons CF was completely discarded and discredited in the U.S. in the early 1990's; and certainly many skeptics there and other places were genuine in their condemnations, since many labs attempted "honest" replications and failed to get any positive results (but others during that time did in fact get good results). At any rate, events have proven that the early Pons and Fleischmann experiments were indeed correct and worthy of much greater study and investment, and the most prestigious scientific institute of all, M.I.T., has now seen a successful public demonstration and verification over 20 years later."

[Steve Windisch, "Cold Fusion is Here, It's Real, and its Time has Come", <http://www.opednews.com/populum/page.php?f=Cold-Fusion-is-Here-It-s-by-steve-windisch-120202-446.html#startcomments>, 2-2012]

190. [nickelpower](http://nickelpower.org/2012/02/01/cop-greater-than-10-demonstrated-at-mit/) URL = <http://nickelpower.org/2012/02/01/cop-greater-than-10-demonstrated-at-mit/>

"As part of the IAP Course on COLD FUSION at the Massachusetts Institute of Technology, Dr. Mitchell Swartz, JET Energy, and Prof. Peter Hagelstein demonstrated a significant energy gain greater than 10! (<http://world.std.com/~mica/cft.html>) Now we have 3 dogs in the race. There are now three separate organizations that are generating useful COP from LENR. 2012 is the year that LENR denial will crumble!"

[nickelpower, <http://nickelpower.org/2012/02/01/cop-greater-than-10-demonstrated-at-mit/>]

191. New Energy and Fuel URL = <http://newenergyandfuel.com/http://newenergyandfuel.com/2012/02/09/now-a-little-controversy-involving-cold-fusion/>

News and Views for Making and Saving Money in New Energy and Fuel  
**"Now a Little Controversy Involving Cold Fusion"**

February 9, 2012 - "It's enough to make one smile with the silliness of the thing.

As noted here last week Electrical Engineering Prof. Peter Hagelstein at the Massachusetts Institute of Technology (MIT) taught an Independent Activities Period course titled "Cold Fusion 101: Introduction to Excess Power in Fleischmann-Pons Experiments". Dr. Mitchell Swartz, of JET Energy and Prof. Hagelstein demonstrated cold fusion openly for the attending scientists and engineers. So far so good. These kinds of things make news and much to your humble writers surprise, the information kept coming out and got – confused, by relatively competent people. The smile is from the fact the controversy is in reading somewhat difficult graphs instead of whether the cold fusion is working. The oddest thing is after the huge MIT public relations effort to discredit Fleischmann-Pons years ago, there seems to be a working apparatus on campus. OH! Horrors. Or – its about bloody time . . . An apology seems to be in order, but that level of character and honor is likely out of such an institution's reach....

The little incident has been a bit of a joy as more information has become available to see just to what point the Swartz Hagelstein duo has progressed. The Swartz Hagelstein device seems to work, too. OK, its not a huge output or anything amazingly ground breaking, yet its enough output to be net and documented well enough to provoke some important theoretical thought. Dr. Swartz is highly competent, published, and participates in the worldwide network of cold fusion research. This gentleman is nearly the ideal of skeptics' term for credence. .... Cold Fusion or Low Energy Nuclear Reactions (LENR) or Lattice Assisted Nuclear Reactions (LANR) labels matter not. The technology is getting on its feet and is the opening big story for the 21st Century. Your humble writer believes that "Cold Fusion" will do – if only to show history that a cabal of poor quality and low character scientists set back progress by over two decades. We can say Cold Fusion is alive and growing. Smile eight."

[New Energy and Fuel, News and Views for Making and Saving Money in New Energy and Fuel, <http://newenergyandfuel.com/http://newenergyandfuel.com/2012/02/09/now-a-little-controversy-involving-cold-fusion/>, February 9, 2012]

192. Cold Fusion Has a Good Week

URL

<http://newenergyandfuel.com/http://newenergyandfuel.com/2012/02/02/cold-fusion-has-a-good-week/>

February 2, 2012

"Last week at the Massachusetts Institute of Technology (MIT), Electrical Engineering Prof. Peter Hagelstein taught an Independent Activities Period course titled "Cold Fusion 101: Introduction to Excess Power in



**Fleischmann-Pons Experiments.” For many, the news that an MIT professor holding a cold fusion class at MIT is astonishing because decades ago former MIT people went to extreme lengths to discredit cold fusion and denigrate the careers of interested researchers. Times have changed. The capstone of the class was when Dr. Mitchell Swartz, of JET Energy presented experimental results showing excess power in Palladium/Deuterium and Nickel/Hydrogen systems, with a particular focus on experiments he himself has conducted.**

**The news reported is Dr. Swartz and Prof. Hagelstein demonstrated cold fusion openly for the attending scientists and engineers. Using the Jet Energy NANOR device they demonstrated a significant energy gain, greater than 10, much larger than the previous open demonstration back in 2003 with a 2.3 yield. The demonstration was for the class, meaning no attempt was made to assuage skeptics. .... It seems that after 5 (about 2 hour classes each day) days of Prof. Hagelstein sharing his breakthrough explanatory theory, the demonstration had the desired effect. Perhaps the class will encourage the participants to continue their research and more improvement can come over time.”**

**[Cold Fusion Has a Good Week;**  
<http://newenergyandfuel.com/http://newenergyandfuel.com/2012/02/02/cold-fusion-has-a-good-week/>, February 2, 2012]

193. nickelpower

URL = <http://nickelpower.org/2011/12/30/replicators-as-if-december-30-2011/>  
 Replicators (as of February 2, 2012)

**Below is an annotated and linked list of reports of 16 people who have achieved a Ni + H reaction: ....**

**Dr. Brian Ahern, Ames National Laboratory - While it is not clear that Ahern is using nickel, it is clear that he is using light hydrogen. It is also clear that he sees it as a replication of Rossi. He says, “This 5 watt excess is very much less than Rossi, but it is a real and repeatable experiment There was no radiation above the background level.”**

**<http://www.mail-archive.com/vortex-l@eskimo.com/msg47437.html> ....**

**James Patterson, 1920 – 2008, A “chemist” - Invented his “power cell” which is reported to produce 200 times energy gain. In June 11, 1997 he demonstrated his technology on Good Morning America. The scientific community, obviously, mostly ignored him. He tried to produce a commercial product, but apparently had difficulty mass producing the intricate “beads” that he used in his reaction. [http://en.wikipedia.org/wiki/Patterson\\_Power\\_Cell](http://en.wikipedia.org/wiki/Patterson_Power_Cell) ....**

**George Miley, Department of Nuclear, Plasma, and Radiological Engineering, University of Illinois - Began with Patterson’s technique. Reports excess heat, and transmutations.**

**<http://www.mail-archive.com/vortex-l@eskimo.com/msg53212.html>**

**Piantelli, University of Siena, Italy. - The Piantelli group filed an Italian patent application, “Method for Producing Energy and Apparatus Therefor”, on**

November 24, 2008. Piantelli's technology uses a nickel bar which is etched to increase its surface area. He reports 2 – 3 times energy gains. Piantelli's work with LENR goes back two decades and includes two dozen scientific publications and conference presentations.

(<http://blog.newenergytimes.com/2011/09/28/nasa-advances-evaluation-of-piantelli%E2%80%99s-lenr-research/>) ....

Francesco Celani, National Institute of Nuclear Physics (Italy's equivalent of Los Alamos) - He has announced success in producing the Ni + H reaction, and obtaining 200% (2x) excess thermal energy. [http://energycatalyzer3.com/news/top-italian-scientist-claims-to-have-achieved-nickel-hydrogen-cold-fusion ...](http://energycatalyzer3.com/news/top-italian-scientist-claims-to-have-achieved-nickel-hydrogen-cold-fusion...)

Dr. Eugene Mallove and Dr. Mitchell Swartz, Jet Energy, Inc. Guest lecturers at MIT <http://world.std.com/~mica/jet.html>

The MIT "Independent Activities Period" syllabus states: On 1/30 and 1/31 M. Swartz will discuss results he has obtained from a variety of cold fusion experiments he has done over the years. He has observed excess power in PdD and in NiH experiments; typical energy gains in the range of 2-3 are seen, with a few experiments giving higher energy gain; he has carried out a demonstration of his experiment previously at MIT; and energy produced from cold fusion reactions has been used to drive a Stirling engine.

<http://student.mit.edu/iap/nc9.html> Demonstrated COP of 10 at MIT: <http://world.std.com/~mica/cft.html>

So as of January 12, 2011, we have 14 independent sources who have produced excess energy from the Ni + H reaction. Many of these are well respected scientific organizations. All of them come with supporting links."

[nickelpower, Replicators (as of February 2, 2012), <http://nickelpower.org/2011/12/30/replicators-as-if-december-30-2011/>]

### **UNCONTESTED FACT: Utility is Confirmed by the Claims**

#### **☑ Invention's Utility Confirmed by Claims**

194. Based upon the Evidence which the Office has viciously, illegally, cruelly removed from the file folder by using the lie that Applicant did not provide written documents (when he did and Exhibit "B" confirms the lie of Examiner Dr. Ricardo Palabrica), it can be seen that the Applicant has set forth an invention of great utility within the meaning of 35 U.S.C. 101. See *Brennerv. Manson*, 148 U.S.P.Q. 689. Proof of conformity of the claims with 35 U.S.C. 101 can be understood by first examining Claim 1, starting with the preamble.

One of the most important points regarding Office rejections under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph, is that the claimed invention should be the focus of the utility requirement.

**"Each claim therefore, must be evaluated on its own merits for compliance with all statutory requirements" (MPEP 2107.01, I.).**

The proof of conformity of the claims with 35 U.S.C. 101 can be understood by examining Claim 1, and then dependent claims. This is subject matter for which the present invention has great utility.

### **FINAL ARGUMENTS - Claim Rejections under 35 USC 101**

195. Claims 1-10, 12-19, 21 and 22 have been wrongly rejected, purportedly under 35 U.S.C. 101. The Office has made an improper and reversible rejection under 35 U.S.C. §101 for any of several reasons. However, the Examiner is wrong because Title 35 U.S.C. 101 provides for the issuance of a patent to a person who

**"invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title." [450 U.S. 175, 182].**

For THIS INVENTION, the original specification teaches why this invention has great utility: a process for maximizing the result of a reaction, or reaction rate, or product output, as derived from a material achieved by driving said material by an electric power supply which is modulated to deliver an optimal time function waveform selected by analysis using input power. This includes driving a hydrogen loaded system using a said selected time function chosen by method of analysis using equivalent electrical input power by resolving said waveform into time domain signals of incremental times to determine the distribution of said equivalent electrical input power pulses, and then comparing that to the characteristic response of the material to said electrical input power.

196. The Examiner is wrong because THIS invention (structure, operation and composition) is defined by the claims and the original specification of the above-entitled application and not the art to which the Office refers. Therefore 450 U.S. 175, 182 indicates that this is subject matter for which the present invention has great utility.

197. The Examiner is wrong because he original specification and claims teach, the invention solves a long-standing problem and has features of great utility. Therefore, the Applicant has fully conformed with, and satisfied, the requirements of §101 of the Patent Act and met at least one (1) stated objective [Standard Oil Co. (Indiana) v. Montedison, S.P.A., 664 F.2d 356, 375, 212 USPQ 327, 344 (3rd Cir. 1981), cert. denied, 456 U.S. 915, 102 S.Ct. 1769, 72 L.Ed.2d 174 (1982); E.I. du Pont de Nemours & Co. v. Berkley & Co., 620 F.2d 1247, 1258 n.10, 1260 n.17, 205 USPQ 1,8n10,10n.17 (8th Cir. 1980); Krantz and Croix v. Olin, 148 USPQ 659, 661-62 (CCPA 1966); Chisum on Patents, 4.04[4] [1983]; RAYTHEON COMPANY v. ROPER CORPORATION, U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592].

198. The Examiner is wrong because the Applicant's submitted peer-reviewed articles and Declarations are MORE than sufficient [In re Brana, 51 F.3d at 1566, 34 USPQ2d at 1441] to meet the "burden shift ... to provide rebuttal evidence sufficient to convince such a person of the invention's asserted utility".

Despite that Examiner's defiance, proof of utility is sufficient if it is convincing to one of ordinary skill in the art [In re Irons, 52 CCPA 938, 340 F.2d 974, 144 USPQ 351 (1965)]. THIS invention is convincing to several of ordinary skill in the art who have stated so at public meetings and as Declarants and witnesses have stated facts that demonstrate that the original specification and claims clearly define subject matter of considerable utility. The Applicant has taught a method of great utility to many Declarants, all within the meaning of 35 U.S.C. 101 [Brenner v. Manson, 148 U.S.P.Q. 689]. The Declarations thus prove operability and utility of the present invention and demonstrate validation of the Applicant's claimed subject matter. Therefore, the teachings have been corroborated, and therefore there is enablement (a question of law; In re Fouche, 439 F.2d 1237, 1243, 169 USPQ 429, 434, (CCPA 1971)). Enablement, utility, and operability are grounds for patentability.

199. The Examiner is wrong because public demonstrations, said Declarations, and the peer-reviewed publications by the American Nuclear Society are further Evidence that decimate the Examiner's opinion and discriminatory notions which usurp civil rights.

200. The Office has made an improper and reversible rejection under 35 U.S.C. §101 for any of several reasons. First, proof of utility is sufficient if it is convincing to one of ordinary skill in the art [In re Irons, 52 CCPA 938, 340 F.2d 974, 144 USPQ 351 (1965)]. THIS invention is convincing to several of ordinary skill in the art who have stated so at public meetings and as Declarants and witnesses have stated facts that demonstrate that the original specification and claims clearly define subject matter of considerable utility. The Applicant has taught a method of great utility to many Declarants, all within the meaning of 35 U.S.C. 101 [Brenner v. Manson, 148 U.S.P.Q. 689]. The Declarations thus prove operability and utility of the present invention and demonstrate validation of the Applicant's claimed subject matter. Therefore, the teachings have been corroborated, and therefore there is enablement (a question of law; In re Fouche, 439 F.2d 1237, 1243, 169 USPQ 429, 434, (CCPA 1971)). Enablement, utility, and operability are grounds for patentability.

201. Second, public demonstrations, said Declarations, and the peer-reviewed publications by the American Nuclear Society are further Evidence that decimate the Examiner's opinion and discriminatory notions which usurp civil rights.

202. Third, the Examiner is wrong because he has not followed the standards of review, Office rules, or federal law.

i - The Examiner must consider those skilled-in-the-art who oppose and counter his rejection made without serious foundation under 35 U.S.C. §101.

ii - The Examiner has ignored Evidence consisting of the original specification and claims, the submitted Declarations, and publications, which have provided confirmation of utility.

iii - The Examiner ignores In re Brana and In re Eltgroth, 419 F.2d 918, 164 USPQ 221 (CCPA 1970) which demand that the Examiner must establish a reason to doubt an invention's asserted utility. This invention is quite believable. In re Brana, 51 F.3d at 1566, 34 USPQ2d at 1441] indicates Applicant's actions hereby meet the "burden shift ... to provide rebuttal evidence sufficient to convince such a person of the invention's asserted utility".

iv - The Examiner has rejected In re Marzocchi and In re Oetiker which require responsive argument to the fully addressed criticism against the Examiner's unfounded notions. In re Marzocchi, 439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971)] declares that the Examiner cannot make the rejection he has unless he has

reason to doubt the objective truth of the statements contained in the written description, here corroborated and supported by multiple Declarations.

203. Fourth, the Examiner has given no precise, accurate foundation as a basis for his own rejection, and change of, Office rules, and federal law. The examiner should explain why these 'filings' and 'references' are inadequate in evidentiary weight, to overcome the evidence proffered by the examiner.

204. Fifth, the Examiner is biased and has systematically instituted a policy of abusive discrimination and harassment focused on, and directed against, the Applicant. Given the facts stated above, and the fact the Office has granted patents to inventions of considerably less "utility" [e.g. Patent 3,580,592 or 3,450,403], any further rejection of the present invention on this arbitrary basis based upon such a presumed "non-utility" would appear to be both capricious, unwarranted, and unreasonable.

205. This invention (structure, operation and composition) is defined by the claims and the original specification of the above-entitled application and not the art to which the Office refers. The present invention has obvious utility to determine the optimum electrical drive condition for said sample and thereby characterize said sample. The original specification and claims teach, the invention solves a long-standing problem and has features of great utility. Therefore, the Applicant has fully conformed with, and satisfied, the requirements of §101 of the Patent Act and met at least one (1) stated objective [Standard Oil Co. (Indiana) v. Montedison, S.P.A., 664 F.2d 356, 375, 212 USPQ 327, 344 (3rd Cir. 1981), cert. denied, 456 U.S. 915, 102 S.Ct. 1769, 72 L.Ed.2d 174 (1982); E.I. du Pont de Nemours & Co. v. Berkley & Co., 620 F.2d 1247, 1258 n.10, 1260 n.17, 205 USPQ 1,8n10, 10n.17 (8th Cir. 1980); Krantz and Croix v. Olin, 148 USPQ 659, 661-62 (CCPA 1966); Chisum on Patents, 4.04[4] [1983]; RAYTHEON COMPANY v. ROPER CORPORATION, U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592].

206. Sixth, the Examiner has been again exposed destroying/removing/ignoring/blackening out relevant submitted Evidence from a *pro se* Applicant.

207. In this case, utility under 101 is clearly shown. Therefore, the Applicant has fully conformed with, and satisfied, the requirements of §101 of the Patent Act. Given the utility, Applicant respectfully requests reconsideration and reversal of the rejection of Claims 1-10, 12-19, 21 and 22 (all Claims) pursuant to U.S.C. 101, and issuance of the above-entitled application.

## **OTHER ISSUES BEFORE THE BOARD**

### **Examiner Failed Requests For Constructive Assistance**

208. The *pro se* Applicant again requested that if, for any reason the claims of this application are not believed to be in full condition for allowance, the applicant respectfully requests constructive assistance and suggestions constructive assistance and suggestions from the Examiner in drafting one or more acceptable claims [pursuant to MPEP 707.07(j)] and in making constructive suggestions [pursuant to MPEP 706.03(d)]. The Examiner REFUSED. Applicant notes that the U.S. Supreme Court has ruled that any *pro se* litigant is entitled to less stringent standards [U.S. Rep volume 404, pages 520-521 (72)].

209. Applicant notes that the Office has ignored his previous requests in '457 that if, for any reason the claims of this application were not believed to be in full condition for allowance, the applicant respectfully requested the constructive assistance and suggestions of the Examiner in drafting one or more acceptable claims [pursuant to MPEP 707.07(j)] or in making constructive suggestions [pursuant to MPEP 706.03(d)] in order that this application can be placed in allowable condition as soon as possible and without the need for further proceedings. Instead, peer-reviewed publications submitted were removed from the file folder and the invention was misdescribed.

## THE EXAMINER HAD OBLIGATION TO RESPOND TO WHAT WAS SUBMITTED

210. Following receipt of Applicant's Communication, which provided Evidence in the form of Declarations and publications that rebut the Office, the Office personnel, i.e. the Examiner, should have reviewed the original disclosure, any evidence relied upon in establishing the *prima facie* showing, any claim amendments, and any new reasoning or evidence provided by the applicant in support of an asserted specific and substantial credible utility/operability. Simply put, per In re Oetiker, the Examiner was required to have a responsive argument. This will be documented below in considerable detail.

211. It is a fact that the rejection for putative "lack of operability" or "enablement" under 35 U.S.C. §112, ¶1 and "lack of utility" under 35 U.S.C. §101 has only been made by ignoring the original specification and claims, by ignoring the timely-submitted unrebutted Declarations and references. However, in Applicant's Communication to the Examiner dated 12/2/2011, the Applicant provided Evidence in the form of peer-reviewed publications that rebut the Office. They have been ignored by the Examiner. They were submitted and some listings have been ignored and corruptly removed by black-lining out the *pro se* Applicant's required, cited, and submitted reference) from the Forms 1440 with no substantive reason. In addition, in Applicant's Communication to the Examiner dated 12/2/2011, the Applicant provided Evidence in the form of Declarations which rebut the Office's unsubstantiated position.

Applicant's previous Response to the Office, dated 12/2/2011, was received by the USPTO. The Evidence has been ignored by the Examiner.

212. The Examiner has egregiously IGNORED what the applicant SUBMITTED in Applicant's Communication dated 12/2/2011. Arguments, Declarations and peer-reviewed papers are simply ignored by the Examiner. They were submitted and some listings have been wrongly ignored and/or unethically removed from the Forms 1440 with no substantive reason.



213. The Examiner has not responded to the Applicant's peer-reviewed publications by the American Nuclear Society and American Chemical Society.

214. The Examiner has failed to consider and respond substantively and honestly to each substantive element of Applicant's substantive responses to the Examiner's unfounded rejections.

215. The Examiner has absolutely, completely failed his responsibility to address the submitted Evidence.

Despite the false innuendoes of the Examiner who REFUSED to even answer Applicant's arguments or submitted Evidence, these relevant matters are discussed in the original specification including with reference to figures, and is then claimed in the independent claims.

Despite the false statement of the Examiner who REFUSED to even answer Applicant's arguments or submitted Evidence, these relevant papers WERE submitted on paper.

216. The Examiner has not given any foundation, in fact or law, to explain his failure to address the published relevant paper(s) and his failure to substantively address the un rebutted Declarations with specificity, precision their points (rather than what he has so far fabricated).

217. The Examiner did bear the burden of rebutting what Applicant submitted, but instead, wrote in the FINAL, absolutely NOTHING new of substance while only shamelessly pointing to other art, ignoring Applicant's arguments, and proudly pointed out that Evidence timely submitted had been removed/deleted/destroyed/blackenedout/ignored.

218. Instead of being properly responsive, or lawful, the Examiner has not responded to the Applicant's arguments. They have been ignored by the Examiner showing an appearance of impropriety.

219. Instead of being properly responsive, or lawful, the Examiner has not responded to the Applicant's peer-reviewed publications published by the American Nuclear Society. They have been removed by the Examiner. That is corrupt. The Examiner essentially defends Conflict Oil, impugns the American Nuclear Society and the *pro se* Applicant, while systematically violating the US Constitution while the United States of America is at war over energy.

Instead of being properly responsive, the Examiner has shown the appearance of impropriety and violation of Law.

220. Why has the Examiner not replied to Applicant's previous comments? Because the Applicant substantively and completely rebutted the Examiner with argument, Declarations and peer-reviewed publications. Therefore, the Examiner ignored them, removed some, and (again) corrupted the above-entitled docket file. This has more than just an appearance of impropriety. The Examiner did bear the burden of rebutting what Applicant submitted, but instead, writes in the FINAL, absolutely NOTHING of substance while only shamelessly pointing to other art while failing to address the Applicant's arguments, the Examiner has been both untruthful and unresponsive.

### **THE EXAMINER HAS REPEATED THE SAME THINGS IGNORING SUBMISSIONS**

221. Previously, the Examiner gave vague, non-substantive "reasons" sewn from cloth from other art while failing to give any specific or precise, serious and honest reason relevant to the above-entitled application. These faux "reasons" were totally rebutted by the Applicant.

Now, egregiously, in a most hostile and cruel manner without precise, truthful, legal explanation, but with odious strong-arm tactics and abuse of process under color of Law, the Examiner has simply ignored the each and every response of the Applicant and all that was submitted by the *pro se* Applicant in Applicant's Communication to the Examiner dated 12/2/2011.

Now, instead of being lawfully responsive, the Examiner's comments in the FINAL Office Communication are EXACTLY THE SAME as the previous Communication from the Office.

222. In the FINAL, the Examiner merely repeated the fabricated, irrelevant, vague, non-substantive, unsubstantiated "reasons" sewn from cloth from other art and his false, generalized statements he already previously, proclaimed without foundation.

223 Why has the Examiner not replied to Applicant's previous comments? Why has the Examiner simply repeated the same sentences? Because the Applicant substantively and completely rebutted the Examiner with argument, Declarations and peer-reviewed publications. Therefore, the Examiner ignored them, removed some, and (again) corrupted the above-entitled docket file. This has more than just an appearance of impropriety.

224. In Applicant's previous Response to the Office, dated 12/2/2011, the Law and Evidence were cited ... but those arguments were also ignored by the Examiner. Instead, the submitted Evidence accompanying the Applicant's previous Response to the Office, dated 5/23/201 has been ignored/removed/destroyed by the Examiner showing the appearance of impropriety. Instead of a serious response to the submitted Declarations, peer-reviewed publications and thoughtful arguments, the Examiner has been disingenuous, and repeated the same falsehoods and disingenuous statements.

225. If the Examiner was honest and respected the sanctity of submitted Evidence, then he would NOT have said the EXACT SAME THING AGAIN AND AGAIN but in its stead, would have actually performed his job and properly reviewed and commented upon the submitted Evidence. He would have had to admit that the Applicant HAD satisfactorily rebutted (the groundless) rejection of the Examiner who based his 'Decision' upon cloth cut of other art, and withdrawn the rejection. This, however, was not the case.

## **LAW**

226. The Applicant undertook the full burden of coming forward with Evidence as required [In re Oetiker, 977 F.2d at 1445, 24 USPQ2d at 1444]. Significant, detailed, precise, specific, substantive arguments and Evidence of record were submitted by the Applicant to show that the Examiner was incorrect, and to support

that the invention does operate as indicated by the Applicant. By contrast, following receipt of Applicant's Communication to the Examiner dated 12/2/2011, (which provided Evidence in the form of Declarations and publications that rebut the Office) the Office personnel, i.e. the Examiner, should have reviewed the original disclosure, any evidence relied upon in establishing the *prima facie* showing, any claim amendments, and any new reasoning or evidence provided by the applicant in support of an asserted specific and substantial credible utility/operability. Simply put, per *In re Oetiker*, the Examiner was required to have a responsive argument. This will be documented below in considerable detail.

227. It is a fact that following receipt of Applicant's Communication to the Examiner dated 12/2/2011, which provided Evidence in the form of Declarations and publications that rebut the Office, the Office personnel, i.e. the Examiner, should have reviewed the original disclosure, including any evidence relied upon in establishing the *prima facie* showing, any claim amendments, and any new reasoning or evidence provided by the applicant in support of an asserted specific and substantial credible utility/operability. Simply put, per *In re Oetiker*, the Examiner was required to have a responsive substantive argument [*In re Brana*, 51 F.3d at 1566, 34 USPQ2d at 1441] to meet the "burden shift ... to provide rebuttal evidence sufficient to convince such a person of the invention's asserted utility".

228. The Examiner should have been responsive and substantive, rather than destroying Evidence again, because the Office cannot make this type of rejection, unless it has reason to doubt the objective truth of the statements contained in the written description [*Brana*, 51 F.3d at 1566, 34 USPQ2d at 1441 ("[T]he PTO has the initial burden of challenging a presumptively correct assertion of utility in the disclosure. Only after the PTO provides evidence showing that one of ordinary skill in the art would reasonably doubt the asserted utility does the burden shift to the applicant to provide rebuttal evidence sufficient to convince such a person of the invention's asserted utility."); *In re Marzocchi*, 439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971) ("[A] specification disclosure which contains a teaching of the manner and process of making and using the invention in terms which correspond in scope to those used in describing and defining the subject matter sought to be patented must be taken as in compliance with the enabling requirement of the first

paragraph of §112 unless there is reason to doubt the objective truth of the statements contained therein which must be relied on for enabling support."). There has never existed honest doubting of the objective truth of the statements relied on for enabling support.

In this case, given the submitted [and received] Declarations, reason never existed doubting the objective truth of the statements relied on for enabling support. Therefore no basis exists for a rejection under either section 112, ¶1 for lack of enablement as a result of

**"the specification's ... failure to disclose adequately to one ordinarily skilled-in-the-art 'how to use' the invention without undue experimentation," or section 101 for lack of utility "when there is a complete absence of data supporting the statements which set forth the desired results of the claimed invention." [Environtech Corp. v. Al George, Inc., 730 F.2d 753, 762, 221 USPQ 473, 480 (Fed. Cir. 1984); also In re Brana, 51 F.3d 1560, 1564 n.12, 34 USPQ2d 1436, 1439 n.12 (Fed. Cir. 1995)].**

229. In summary, the Examiner simply removed some of the Evidence submitted by the Applicant in Applicant's Communication to the Examiner dated 12/2/2011. NO REASONABLE, TRUTHFUL, SUBSTANTIVE EXPLANATION HAS BEEN GIVEN FOR THIS BREACH OF DUTY.

230. His hands now soiled, yet again, with indelible impropriety, Dr. Ricardo Palabrica, appears to truly believe, or has been misinformed, that he has no accountability for his Evidence tampering, his discrimination, his false statements on federal documents, his hate crime, his perjury, his misprision of felony, and his obstruction of justice. With all due respect to help the Examiner understand the point of view of an American who has read the US Constitution (which he disdains) and the US Law and the Office rules, Examiner Palabrica's failure to answer the arguments, and Examiner Palabrica's profiling of the submitted Evidence followed by his removing key discussed papers and Declarations, is quite serious. For the FINAL (possibly in collusion with another or others), on a federal document, mailed through the US mail, over the state border to the Commonwealth of Massachusetts, the Examiner, Dr. Ricardo Palabrica has made a false statement to coverup his destruction/removal/ignoring/extracting/blackeningout of submitted, received documents filed by a *pro se* Applicant in order for Dr. Palabrica to obstruct justice.

### **THE EXAMINER HAD OBLIGATION TO BE TRUTHFUL**

231. Instead of a serious response to the submitted Declarations, peer-reviewed publications and thoughtful arguments, the Examiner has been disingenuous, and repeated falsehoods and disingenuous statements.

232. Instead of a serious response to the submitted Declarations, peer-reviewed publications and thoughtful arguments, the Examiner has been disingenuous, repeating his falsehoods/disingenuous statements again (despite that they were rebutted by Evidence he removed) on federal documents sent through the US mail to obstruct justice.

### **BACKGROUND: The Examiner has been Systematically Disingenuous**

233. In other applications of the Applicant, someone also removed Evidentiary documents. In its Decision regarding 00-1107, on 11/8/00, the Court of Appeals affirmed the Board's decision for putative lack of enablement under 35 U.S.C. § 112, ¶1, and indefiniteness under 35 U.S.C. §112, ¶2 saying that the Applicant has failed to respond. The federal court stated that "Mr. (sic) Swartz made no substantive arguments addressing the examiner's rejection: ... Mr. (sic) Swartz presented no substantive arguments." [Decision 00-1107, 11/8/00]. The Declarations and peer-reviewed papers, as with '457, were egregiously removed surreptitiously by the Office. Despite the fact that the Applicant provided substantive rebuttal evidence [In re Marzocchi] including Declarations by those skilled-in-the-art, supported by peer-reviewed published papers, the Office removed/ignored/destroyed the Evidence. The Office continued to be disingenuous about the matter until the moment in US federal appellate court that it was revealed that not all the pleadings and Declarations were logged into the record. Some of the Declarations were egregiously hidden from the Board and the federal court. They were "misplaced" by not recording them. What was exposed was that some Declarations were incorrectly listed as "letters", and nearly a score of pleadings listed out-of-order temporally [and even later labeled with half-"1/2"-numbers], these pleadings and several Declarations all reached the Office as proven by the stamp of the US Patent Office. The Declarations were only

then, entered late, after the fact, when it was too late, and they were given "half" numbers to fit and squeeze them into the order already in place.

234. As a result, there was a Petition for Certiorari to the Supreme Court of the United States (00-1191) and a Request for Consideration. What was exposed, resulting in the Request for Consideration and the Petition for Certiorari to the Supreme Court of the United States (00-1191) was that the Office had failed to log in or consider all the relevant submitted Declarations - despite a previous ignored Remand by the Board to do just that. So, following the revelations that someone in the Office had 'doctored' federal documents, the US Patent Office defaulted (ie. failed to answer). The Office failed to Respond in the Supreme Court (twice). According to the clerk at the US Supreme Court, this was the first time in history they had ever defaulted.

**"Fatetur facinus qui judicium fugit."**

235. Why did the Patent Office refuse to respond to the Appellant's Petition for Certiorari (00-1191)? It was the USPTO's first time in history to have defaulted. It is probably because it became clear that the Office had failed to log all the relevant submitted Declarations. Furthermore, it became clear that the Office had corrupted the record and then misled the Board and then the Court mischaracterizing the above-entitled invention by claiming there was "excess heat" when it was never even mentioned in the original specification and claims. Also, because newly discovered Evidence including the SAW Memorandum has revealed that the Examiner and his group Art have acted in a conspiratorial manner encouraging systematic violations of 18 U.S.C. §1001. - By contrast, the U.S. Supreme Court has ruled that any *pro se* litigant is entitled to less stringent standards [U.S. Rep volume 404, pages 520-521 (1972)].

236. According to the clerk at the US Supreme Court, this was "the first time in history the USPTO (had) ever defaulted". No explanation was given for egregious irregularities, or the Office's entries out-of-order temporally, indicating that the purported "Docket" was not made contemporaneously --- and in defiance of the Office's date stamps --- and in violation of 18 U.S.C. 2071. Instead, to the present

date, the Office has continued to be disingenuous PRECISELY BECAUSE it was revealed that not all the pleadings and Declarations were logged into the record.

**Detailed Specific REMARKS REGARDING Examiner's Non-responsive and Evidence-Removing "Final"**

237. The Examiner, does not state how he judges "persuasiveness", especially, since that is a particularly subjective element. He should state how he defines the word and how he goes about making those determinations in detail. Therefore, and second, his comments are absolutely incorrect, unfair, and disingenuous.

238. The peer-reviewed published papers refute the Office. Confer Swartz, M.R. "Survey of the Observed Excess Energy and Emissions In Lattice Assisted Nuclear Reactions", Journal of Scientific Exploration, 23, 4, 419-436 (2009), Swartz, M., "Excess Heat from Low Electrical Conductivity Heavy Water Spiral-Wound Pd/D<sub>2</sub>O/Pt and Pd/D<sub>2</sub>O-PdCl<sub>2</sub>/Pt Devices", Condensed Matter Nuclear Science, Proceedings of ICCF-10, eds. Peter L. Hagelstein, Scott, R. Chubb, World Scientific Publishing, NJ, ISBN 981-256-564-6, Pages 29-44; 45-54, and 213-226 (2006), Swartz, 1998, Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes, Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85 and Swartz(97).

[\*\*\*\*\*] For years, Dr. Palabrica has removed these publications from the file folders and ignored the rest.

239 These peer-reviewed publications show that growing numbers of the scientific community consider the positive results of Appellant's work as being operative and of utility. That includes the American Nuclear Society and the American Chemical Society. It is these individuals in the scientific community who actually research and write the scientific technical papers which undergo peer-review, file patent applications, and attend the Conferences who accurately evaluate inventions, products and publications. This community is defined as those



"skilled in the art". They disagree with the Examiner's notion as to the operability and utility of this invention.

240. While the Examiner has been destroying Evidence to stop the present patent application by ignoring previously submitted Arguments, the *pro se* Applicant was giving his second (2nd) OPEN DEMONSTRATION of his LANR (Lattice Assisted) technologies. It was covered in many countries. In the last Communication, even more Evidence and URLs were provided for Dr. Ricardo Palabrica to examine and consider --- but again he ignored and destroyed/removed/blackenedout the submitted arguments and Evidence.

241. The Examiner's false statements have been made again only by ignoring the submitted Declarations. The Declarations contain factual statements which detail rebuttals to the Office and support the Applicant's position. The Declarations constitute significant reputable evidence of record and a *bona fide* case which is quite convincing and persuasive to one who is open-minded and not biased. Applicant's Declarations show precisely that the Examiner is inaccurate on issues of operability, refute all of his points of rejection, and substantially, completely and fully address and precisely dispute all of the Examiner's points of rejection and all matters criticized by the Office. They also prove the Office's hostile and discriminatory notions are wrong in this matter. The Declarations document Applicant's demonstrations of the Applicant's invention, including one open to the public, at the Massachusetts Institute of Technology [Cambridge, MA] for a week before hundreds of people.

242. The Evidence demonstrates validation, operability, considerable utility, and therefore enablement of the present invention and Applicant's claimed subject matter. They indicate that the teachings in the original specification, claims, and drawings are sufficient and convincing to one of ordinary skill in the art -- heralding operability and conformity and compliance with the 35 U.S.C. §112, §1 (first paragraph) and the "enablement" requirement.

243. Attention is directed to the fact that the Examiner has removed Evidence and misstated the entire matter while refusing to address the above-entitled invention.

The Examiner removes the *pro se* submitted publications by other authors, ignores the *pro se* submitted publications by other authors, and then ruthlessly purports "applicant relies upon are primarily his own, self-authored articles". This is the height of absurdity. Does Examiner actually think no one can see through this improper, unethical, behavior?

The Examiner has dared to remove the *pro se* submitted publications which were peer reviewed by the US Nuclear society (ANS) and then cruelly outrageously claims "applicant relies upon are primarily his own, self-authored articles and cannot be considered as coming from an unbiased source". They were peer-reviewed. And in response, Dr. Palabrica removed the peer-reviewed articles published by the American Nuclear Society, shamefully, thereby being again deliberately deceptive.

#### **UNDISPUTED FACT: Declarations Describing the USPTO**

244. The Patent Office has acted wrongly. As the Hagelstein Declaration states,

**"12. Since the USPTO refuses to recognize the existence of the effect, patents can-not be obtained on the associated technology. Because of this, funding to de-velop the technology is generally unavailable, or very nearly so, which hinders its development. By following its misguided policy in this area, the patent of-fice impedes the development of technology that would address the energy problem, that would impact the availability of fresh water, and that could provide a real solution to the climate change issues the world faces. The devel-opment of this technology could have a real impact on national security, as the instability which results from the current situation regarding the finite avail-ability of oil in less than friendly regions could be mitigated with the new en-ergy source this technology promises. The development of a new energy tech-nology in this area would be expected to provide jobs, which are badly needed at this time."**

245. As the Hagelstein Declaration states,

**"13. According to the USPTO website, the mission is described as: The USPTO mission is to ensure that the intellectual property system contributes to a strong global economy, encourages investment in innovation, and fosters entrepre-neurial spirit. The USPTO promotes industrial and technological progress in the United States and strengthens the national economy by:**

**"Administering the laws relating to patents and trademarks.**

**"Advising the Secretary of Commerce, the President of the United States, and the administration on patent, trademark, and copyright protection.**

**"Advising the Secretary of Commerce, the President of the United States, and the Administration on the trade-related aspects of intellectual property".**

**In the general area of the Fleischmann-Pons effect, the USPTO accomplishes ex-actly the opposite of its mission. The global economy is faltering, and this technology could make a difference, but is not allowed to do so because of the USPTO. The USPTO hinders industrial and technological progress, since pat-ents generally are not allowed, because there is little or no investments (be-cause intellectual property cannot be protected). In general, the USPTO pre-vents progress through its actions, contrary to its mission statement."**

246. The Examiner has acted wrongly in this matter, and has a history of this. The Ahern Declaration states,

**"I sympathize with the Applicant, Dr. Mitchell Swartz. I can understand his frustration with one USPTO examiner, namely, Mr. Palabrica, who was an ex-aminer for my filing of a patent application on an invention involving high en-ergy density discharges and their intensification by high voltage pulses in liq-uids. For this invention, I drew on the vast experience of decades of exploding wire experiments and other high energy density studies. I based the invention on the same principle that is routinely observed in femtosecond laser-matter in-teractions. This invention was useful because energy could be extracted. My patent application was taken by Mr. Ricardo Palabrica."**

**"The Examiner Mr. Palabrica denied my application and dismissed all of my claims on the grounds that he deem'ed that it was "cold fusion". My technology, my scientific explanations, and my arguments were summarily essentially ig-nored and dismissed by Mr. Palabrica, as he appeared to have pre-judged my technology and invention as part of the 'cold fusion' phenomenon. It was not. I did not even used those words. I did not even use the word "fusion" in my filing. I did use the metal palladium and heavy water, but the similarities ended there."**

247. As with this present invention, Mr. Palabrica has essentially demanded changes and then claimed "new material". This is wrong. The Ahern Declaration states,

**"In discussions, Mr. Palabrica implied that if I removed all references to palla-dium and heavy water that a successive patent application would be allowed. Mr. Palabrica said that a new filing without the words 'fusion', 'palladium' and 'heavy water' would have a much better chance of moving forward. This was an odd request by Mr. Palabrica because to compliance to his demand would have made a second filing useless by removing the very materials used. Because Mr. Palabrica apparently has the power to decide**

what an inventor's technology would be, I gave up in frustration even though I believed, and continue to believe, that the technology was sound."

"I am the inventor of over 20 patents, and have never experienced such a re-sponse from any Examiner before, like I have from Mr. Palabrica. Mr. Palab-rica's response was inappropriate for a Patent Examiner. The comments in-volve attempting to change an invention by overstepping his directives and act-ing as a 'protector' of scientific knowledge."

"The Applicant, Dr. Mitchell Swartz appears to be laboring under the same mis-use of authority.

### **UNDISPUTED FACT: The Office's Continual, Unmitigated Reliance on Cloth Cut of Other Art is Improper**

248. By perpetually invoking "F+P" and art cut of other cloth than the present invention, the Examiner and Office needlessly use a broad brush, apparently with tongue in cheek, to deliberately mislead away from the above-entitled invention. Such handwaving to other much less relevant art is not a fair or proper rebuttal. The present invention is NOT the work of Pons or Fleischmann, and so it is salient that this is done to confuse the issue, as the Examiner systematically deviates from the present invention and refers ONLY to other art, located far from the present invention.

Simply put, the Office's continual, unmitigated reliance on cloth cut of other art is discriminatory and targeting the Applicant.

249. Applicant submits that if the Office must rely upon reference to art cut of a cloth other than this specification and claims, then their position must indeed be rather weak and should dictate allowance of the present invention.

250. The Office's unsubstantiated claim that the invention lacks operability is always imagined by the Examiner based upon his exclusion of Applicant's submissions and replacing them solely with other peoples' work, such as F+P. That is not proper.

Attention of the Court and Congressional review are directed to the fact that even now --23+ years after FP, the Office still, always drifts toward criticism of "FP". The present invention is NOT the work of Pons or Fleischmann despite the Examiner's innuendo. This demonstrates systematic discrimination by the Office and the Examiner(s) against the Appellant for reasons unclear, under color of Law, to deny justice, and on information and belief, to enable transfer of the technology to other countries overseas.

### LAW

251. By ignoring the description of this patent and focusing on "F+P", the Examiner has ignored and rejected MPEP §2111.01. The Office's rule [M.P.E.P. §2111.01] requires that "the words of a claim ... must be read as they would be interpreted by those of ordinary skill in the art".

252. By ignoring the description of this patent and focusing on "F+P", the Examiner has ignored and rejected the reasoning of *In re Fouche* [439 F.2d 1237, 1243, 169 USPQ 429, 434, (CCPA 1971) and *In re Zletz* [893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989)] which state that an invention (in structure, operation and composition) is defined by the claims and the original specification.

253. By ignoring the description of this patent and focusing on "F+P", the Examiner has ignored and rejected the reasoning of *In re Morris* [also *Ex parte Porter*] because the interpretation of an issue of fact, like operability, must read on the original specification and claims and be predicated upon the Declarations to a conclusion consistent with what one who is skilled-in-the-art would reach.

254. By ignoring the description of this patent and focusing on "F+P", the Examiner has ignored and rejected the reasoning of *In re Zletz* [893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989)] because the specification clearly and explicitly stated the meaning of the terms in the claims which means that the invention is a method to measure activity.

255. By ignoring the description of this patent and focusing on "F+P", the Examiner has ignored and rejected the reasoning of *In re Prater*, 415 F.2d 1393, 162

USPQ 541 (CCPA 1969)] which requires the Examiner to refer to the claimed invention as the focus of its Office communication, but he has not by drifting toward criticism of "FP" again while ignoring all the figures and all the data and all the information in the application. It is unfair for the PTO to repeatedly weave systematic misstatements into its imagined cloth cut of other art.

256. By ignoring the description of this patent and focusing on "F+P", the Examiner has ignored and rejected the reasoning of *In re Hogan* [559 F.2d 595, 60S, 194 USPQ 527, 537 (CCPA 1977)] which discusses that enablement must be judged on the original specification and claims.

257. By ignoring the description of this patent and focusing on "F+P", the Examiner has ignored and rejected the reasoning of *In re Ziegler* [992 F.2d 1197, 1200, 26 USPQ2d 1600, 1603 (Fed. Cir. 1993)] because the notion that the written description fails to illuminate a credible operability can only be made, by not reading on the claims of this patent. However, it is below the standards of review to solely use cloth cut of other art because the invention (structure, operation and composition) is defined by the claims and the original specification. This leading away from the actual original specification and claims by the Office herald bias by the Office rather than proper application of the standards of review.

258. The Examiner's action are improper and unlawful, in violation of *Newman v. Quigg* [877 F.2d 1575, 1581, 11 USPQ2d 1340, 1345 (Fed. Cir. 1989)] because the Office derides the present invention with reference to cold fusion but, in fact, Claim 12 (and the other claims) is a method for a monitoring loading. Such (well-known) "boilerplate" attacks by the Office on the words "cold fusion" is well-known [confer Bass, Rotegard, and Mallove Declarations, and the Valone, Fox, and Mallove *Amicus Curiae* Briefs].

259. In summary, as the *Amicus Curiae* Brief of Eugene F. Mallove, Sc.D (Editor, New Energy Research Laboratory, NH) has stated,

**"The most notable characteristic of the attack against the Swartz patent application at hand is its stale fixation with misrepresented events of 1989, its citation of erroneous reports, and its continued argument from supposed authority, rather than from evolved science and meticulous experiment."**

### **THE EXAMINER HAS CREATED THE APPEARANCE OF IMPROPRIETY**

260. Even after notification, the Examiner appears to not be encumbered by honesty, or duty, or responsibility to Law, since the Examiner has ignored Applicant's arguments, removed the Applicant's submitted Evidence, and has then repeated disingenuous statements, strongarm tactics, obstruction of justice and discrimination under color of law.

NOTA BENE: This is not normal due process. This is destruction of Evidence, lying on federal documents sent through the US mail, strong arm tactics, discrimination, and failure to perform duty.

261. On information and belief, Americans respectfully want an answer to the following questions from the Board of Patent Appeals, in the light of the following: First, the destruction of Evidence and issuing of false statements on federal documents is illegal. Second, so far the Board appears to be a willing partner to this Evidence ignoring/removal/destruction/removal and cover-up because it has accelerated AFTER the Board gave Dr. Palabrica a virtual 'green light' on February 22, 2011 (in a different case before it, by ignoring Dr. Palabrica's destruction of Evidence in THAT case).

How many tens of thousands of the American people must die from lack of clean energy before the Dr. Palabrica recognizes the need and the open demonstrations and the submitted peer-reviewed publications and the submitted un rebutted Declarations?

Why does the Board permit, condone, allow, and encourage, the ignoring/destroying/removing/blackening-it-out of timely-submitted Evidence?

How many hundreds of thousands of dollars must be made from Conflict Energy and Blood Oil by Dr. Palabrica and his associates (in not just the USA it seems) before there is any accountability?

262. Instead of substantively responding to Applicant's Communications as is reasonably expected, the Examiner elected not to answer Applicant's responses. By this odious means, the Examiner has thereby, quite cruelly and without accountability so far, robbed the *pro se* Applicant of all opportunity to answer BEFORE FINAL. The Applicant paid for the review, but the Examiner has denied the Applicant a proper review and is in violation of M.G.L. 93A and other Laws. However, as an Individual and as an Officer of the USPTO, Dr. Palabrica [and his so-far unaccountable and unnamed supervisors] have total responsibility for removing *pro se* submitted Evidence. That said Evidence involves previous document removal suggests utter contempt of the law and the rules and due process by Dr. Palabrica and his Supervisor(s).

263. Instead of substantively responding to Applicant's Communication to the Examiner dated 12/2/2011 as is reasonably expected, the Examiner repeated exactly the same sentences in his FINAL Communication as the previous one, by simply ignoring every single one of the applicant's responses and removing the *pro se* Applicant's submitted Evidence. The Examiner's failure to act according to his expected duty while, in such a hostile manner, repeating exactly the same question at FINAL after ignoring the applicant's response is egregious.

264. The Examiner's failure to act according to his expected duty, after receipt of Applicant's Communication to the Examiner dated 12/2/2011, as is reasonably expected, is dereliction of duty and avoidance of due process, and has the appearance of impropriety.

265. The Examiner has thrown out applicant's Evidence using deceptive practices.

266. The Examiner's destruction/removal of some of the Evidence is in the place of addressing said Evidence, egregious, and against federal law, common custom, and the US Constitution. So far there has been no accountability of the Examiner, and no transparency of who condoned his unprincipled, behavior described above, and below.



267. The Examiner's failure to act according to his expected duty, with the Examiner removing Documents, is avoidance of due process and discrimination, at best.

268. The Examiner's failure to act according to his expected duty, repeating exactly the same question at FINAL after ignoring the applicant's previous substantive complete response, with the Examiner removing Documents, is obstruction of justice -- and is abhorrent to justice and to the taxpaying public that pays the Examiner to process and not to systematically ignore the applicant's response.

269. The Examiner's failure to act according to his expected duty, has the appearance of impropriety.

270. Corroborating the above, regarding Serial no. 07/ 760,970 Filed: 09/17/1991, on December 5, 2011, Appellant sent a pro se APPLICANT'S PETITION to the COMMISSIONER pursuant to 37 C.F.R. 1.181, because of an egregious "Letter" by Mr. Knight falsely, and deceptively, purporting '970 was abandoned. In fact, this statement in the "Letter" is completely untrue. First, the postal card, indicating receipt by the USPTO [Exhibit "B"] reveals a complete and proper reply that was ignored. The USPTO failed to document the submitted Exhibits. The Applicant filed a complete and proper reply to the final Office action mailed September 2, 1993. The USPTO failed to record it. This is attached in its entirety as Exhibit E0.

271. Therefore, statements by Mr. Knight in his "Letter" are false, and a violation of 18 U.S.C. §1001. They disagree with the actual record. Pursuant to 35 U.S.C. 120, Applicant "filed before the patenting or abandonment of or termination of proceedings on the first application" and then Applicant filed for each "application similarly entitled to the benefit of the filing date of the first application". Furthermore, each patent application contained "specific reference to the earlier filed application". Therefore, Applicant complied with 35 U.S.C. 120. There was no abandonment.

**UNDISPUTED FACT: THE Examiner Has FAILED HiS DUTY**

272. The Applicant undertook the full burden coming forward with Evidence as required [In re Oetiker, 977 F.2d at 1445, 24 USPQ2d at 1444].

Significant, detailed, precise, specific, substantive arguments and Evidence of record was submitted by the Applicant to show that the Examiner was incorrect, and to support that the invention does operate as indicated with Applicant.

273. Said Evidence demonstrated that DTRA disagrees with the Examiner. Said Evidence demonstrated that the US Navy disagrees with the Examiner. Said Evidence demonstrated that thousands of scientists disagree with the Examiner. The Examiner and his supervisor know this.

274. Said Evidence does create the "burden shift ... to provide rebuttal evidence sufficient to convince such a person of the invention's asserted utility" [In re Brana [51 F.3d at 1566, 34 USPQ2d at 1441].

275. The burden was on the Examiner who failed to respond. The Examiner has been essentially and substantively unresponsive to Applicant's arguments, saying the identical same things which are inaccurate, untrue, as they completely ignore the relevant unrebutted Declarations and Exhibits; Evidence which has been corruptly and wrongly ignored and then destroyed/removed/blackened out by Dr. Ricardo Palabrica.

276. The Examiner's action are negligent after the Applicant did respond in full supplying Evidence because the rejection for putative "lack of operability" or "enablement" under 35 U.S.C. §112, ¶1 and "lack of utility" under 35 U.S.C. §101 has only been wrongly made by ignoring the original specification and claims, by ignoring the timely-submitted unrebutted Declarations, by ignoring scores of Exhibits and references, and by ignoring the Office's own rules, and by the Examiner Palabrica removing/destroying/blackening out submitted Evidence.

277. The Examiner's action are negligent after the Applicant did respond in full supplying Evidence because the Office has failed to present its own *prima facie* case of unpatentability.

278. The Examiner has not shown either legal foundation or followed the normal standards of review. The Examiner's actions and behavior do not comport with any notion of fair play or justice.

### UNDISPUTED FACT: THE OFFICE FAILED ITS DUTY

279. The rejection for putative "lack of operability" or "enablement" under 35 U.S.C. §112, ¶1 and "lack of utility" under 35 U.S.C. §101 has only been made by ignoring the original specification and claims, by ignoring the timely-submitted un rebutted Declarations, by ignoring scores of Exhibits and references, and by ignoring the Office's own rules, and thus by the Office having created an arbitrary two-tier "standard of review" for patentability.

280. The rejection is an abuse of the Applicant. The Office has planned a priori to not grant "the right to exclude others from making, using, or selling the invention throughout the United States," for a period of 17 years [35 U.S.C. 154]. Attention is directed to the US Patent Office's own records, uncovered by Honorable Judge Moore, confer "IN THE MATTER OF ARBITRATION Between Patent Office Professional Association FMCS Case No. 00-01666, US Department of Commerce, Patent and Trademark Office (2005). Robert T. Moore, Arbitrator, US Department of Commerce, Patent and Trademark Office, stated,

**"Seemingly lost on those with control over slicing the government pie who are persuaded by the relentless drumbeat of the Parks and Zimmermans, is that those questing for "free energy," whether through cold fusion or by way of some other "emer-ging technology," may be similar to the alchemists of centuries back who never turned base metals into gold, but were the forerunners of modern chemistry, got the Periodic Table of Elements off to a start, and among all things, discovered how to duplicate Asian porcelain which at the time was worth more than its weight in gold. So too, those in pursuit of "free energy" could well spinoff useful ad-vances in knowledge while failing to achieve their "holy grail. .... I was struck by the discomfort of Mr. Godici as he struggled to explain why the blanket exclusion of cold fusion remains in effect when during the intervening 16 years since its adoption, certainly some better understandings and approaches to cold fusion and its related technologies must have occurred which, ordinarily and but for the ban, would meet the new and useful criteria for a patent, or constitute what I'll call, a "non-obvious improvement of existing technology." ... "None of Mr. Godici's answers was totally satisfactory, and the urge, not well restrained, to say, if not scream: Hold it a minute! Isn't time to go back to the earlier days of the PTO when inventors had to produce working models of their devices?"**

**"(There is a) prevailing policy of the PTO. Currently, patent applications for alternative or non-conven-tional sources of nuclear fusion energy, including cold fusion, are routed to (Examiner's Group Art). This routing has been going on for more than 16 years pursuant to a June 5, 1989 memo to all Group Directors with the subject; Cold Fusion Applications. It reads:**

**'Although the media attention relating to cold fusion has diminished, we are just now beginning to see a large number of applications relating to this subject.**

Although we are attempting to identify all of these applications in the pre-examination screening process, there is the possibility that a few applications may slip through without being identified. Please have your examiners be on the look out for any application that may relate to cold fusion. .... If one of your examiners should receive an application related to cold fusion, he or she should check to make sure the words "COLD FUSION" are stamped on the file wrapper. If not, the application should be referred to Licensing and Review [ ] for marking. Also, any action on one of these applications should be routed through the Group 220 Director's Office and the Office of the Assistant Commissioner for Patents prior to mailing."

"The Agency's witnesses avoided directly answering the question of what explicit instructions were given Mr. Behrend and other examiners in the "fusion" group on how to handle applications for cold fusion patents. However, their testimony and demeanor when questioned were clear enough. Figuratively speaking, (they have) a "rejected" stamp he wields on patent applications which claim to achieve cold fusion. That is, whether well founded or not, the PTO has a bias against the concept and theories of cold fusion. .... the PTO considers cold fusion to be "inoperable technology."

[IN THE MATTER OF ARBITRATION Between Patent Office Professional Association FMCS Case No. 00-01666, 2005, Robert T. Moore, Arbitrator, US Department of Commerce, Patent and Trademark Office, Decision AND AWARD ON THE MERITS]

281. Confirming this, the SAWS Memorandum, dated March 27, 2006, confirms the conspiracy against the America Constitution, against the will of the American Congress, and formed secretly by some in the US Patent Office to absolutely positively insure that the American people never maximize their likelihood of energy production and security. The SAWS memo proves that a policy of 'flagging' exists. The discrimination and abuse of the Applicant, now Appellant, is a result of this illegal, sadistic plan which continued after the 911 Attacks against the United States of America, even when energy was involved, and even after the Board of Patent Appeal made this US patent application (the above-entitled action) "SPECIAL".

IMPLICATION #1: The Applicant was never told. Therefore these improper actions, including discrimination and false statements on federal documents, by the Examiners has the appearance of impropriety.

IMPLICATION #2: America and Americans do not benefit from such discrimination and false statements on federal documents. Instead, the Examiners and their Supervisors appear to have withheld another proven ultraclean, incredibly efficient energy source to essentially give overt aid and comfort to enemies of the United States.

### **Final Arguments: THE PATENT SHOULD BE ISSUED**

282. Every single misstatement, disingenuous comment and misleading statement made by the Examiner in the FINAL, has been properly addressed and completely rebutted. These are detailed in Applicant's previous response to the Office, dated 12/2/2011. However, the Examiner destroyed Evidence and ignored the timely-submitted Responses and arguments.

283. As factual matters, operability and utility are decided by Declarations and peer-reviewed publications (representing those 'skilled-in-the-art'). Therefore, the Applicant has submitted:

#1) Declarations from scientists of ordinary skill-in-the-art. Said evidence shows that the Office's position is in error.

#2) The published peer-reviewed scientific articles. They refute the Office, especially Swartz, 1994, "Catastrophic Active Medium Hypothesis of Cold Fusion", 4, "Proceedings: "Fourth International Conference on Cold Fusion" sponsored by EPRI and the Office of Naval Research, and Swartz (1998), Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes, Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85, Swartz. (1997), Fusion Technology, 31, 63-74. These are augmented by Swartz, M.R. "Survey of the Observed Excess Energy and Emissions In Lattice Assisted Nuclear Reactions", Journal of Scientific Exploration, 23, 4, 419-436 (2009), Swartz, M., "Excess Heat from Low Electrical Conductivity Heavy Water Spiral-Wound Pd/D2O/Pt and Pd/D2O-PdCl2/Pt Devices", Condensed Matter Nuclear Science, Proceedings of ICCF-10, eds. Peter L. Hagelstein, Scott, R. Chubb, World Scientific Publishing, NJ, ISBN 981-256-564-6, Pages 29-44; 45-54, and 213-226 (2006), Swartz, 1998, Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes, Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85 and Swartz(97)

Either #1 or #2 are sufficient to demonstrate that the specification provides an adequately written description of the subject matter, including how to operate the invention, and claimed the invention so that an artisan, or those skilled-in-the-art, could practice it without undue experimentation. Either #1 or #2 prove that enablement, utility, and validation. Together, #1 and #2 have been submitted and Applicant submits that these together corroborate enablement of the present invention both *de facto* and *de jure*. As such, the Declarations and peer-reviewed publications confirm that the Applicant's original specification and claims taught the subject matter defined by each of the rejected Claims including how his apparatus and method works, set forth the best mode contemplated, distinctly pointed out and claimed the subject matter which constitutes the invention, wrote an adequate enabling disclosure, and thus complied and conformed with 35U.S.C. §112, first paragraph, of the Patent Act.

284. In Applicant's Communication to the Examiner dated 12/3/2002, the Applicant has specified exactly how he demonstrated that he has described in his application how the above-entitled invention works and is useful.

285. In Applicant's Communication to the Examiner dated 12/3/2002, the Applicant has specified exactly how he provided a description which will allow others to build an apparatus that works, and will deliver said useful result.

286. In Applicant's Communication to the Examiner dated 12/3/2002, the Applicant specified exactly how he characterized the above-entitled invention in claims which are clear and which avoids describing anything previously described in the prior art.

287. In Applicant's Communication to the Examiner dated 12/3/2002, the Applicant provided Evidence in the form of publications that rebut the Office. They have been ignored by the Examiner. They were submitted and some listings have been ignored and/or removed from the Forms 1440 with no substantive reason.

288. In Applicant's Communication to the Examiner dated 12/3/2002, the Applicant provided Evidence in the form of Declarations which rebut the Office. They have been ignored by the Examiner. They were submitted and some listings have been ignored and/or removed from the Forms 1440 with no substantive reason.

289. Applicant has made a documented *prima facie* case with specific and substantial credible utility, and has given open demonstrations at the Massachusetts Institute of Technology on this matter, and oral reports to the US Navy and DTRA and other agencies, whose memoranda and documentation has been shared with the Office. The Examiner, Dr. Ricardo Palabrica, dismisses it all (reasons unclear, agenda unclear).

290. The Examiner's opinion - that the written description fails to illuminate a credible utility - has only been made by not reading on the claims of this patent regarding a monitored vibrating electrode, and by either dismissing the Declarations as opinion or ignoring them altogether. The PTO may establish a reason to doubt an invention's asserted utility only when the written description "suggest[s] an inherently unbelievable undertaking or involve[s] implausible scientific principles." *Brana*, 51 F.3d at 1566, 34 USPQ2d at 1441; see also *In re Eltgroth*, 419 F.2d 918, 164 USPQ 221 (CCPA 1970)). Here, the Declarations demonstrate the PTO is wrong in their opinion.

291. The Examiner cannot make this type of rejection, unless he has reason to doubt the objective truth of the statements contained in the written description [*Brana*, 51 F.3d at 1566, 34 USPQ2d at 1441 ("[T]he PTO has the initial burden of challenging a presumptively correct assertion of utility in the disclosure. Only after the PTO provides evidence showing that one of ordinary skill in the art would reasonably doubt the asserted utility does the burden shift to the applicant to provide rebuttal evidence sufficient to convince such a person of the invention's asserted utility."); *In re Marzocchi*, 439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971) ("[A] specification disclosure which contains a teaching of the manner and process of making and using the invention in terms which correspond in scope to those used in describing and defining the subject matter sought to be patented must be taken as in compliance with the enabling requirement of the first paragraph of §112 unless there is reason to doubt the objective truth of the statements contained therein which must

be relied on for enabling support."). In this case, given the submitted [and received] Declarations, reason never existed doubting the objective truth of the statements relied on for enabling support. Therefore no basis exists for a rejection under either section 112, ¶1 for lack of enablement as a result of "the specification's ... failure to disclose adequately to one ordinarily skilled-in-the-art 'how to use' the invention without undue experimentation," or section 101 for lack of utility "when there is a complete absence of data supporting the statements which set forth the desired results of the claimed invention." [Enviroitech Corp. v. Al George, Inc., 730 F.2d 753, 762, 221 USPQ 473, 480 (Fed. Cir. 1984); also In re Brana, 51 F.3d 1560, 1564 n.12, 34 USPQ2d 1436, 1439 n.12 (Fed. Cir. 1995)].

292. The Examiner's rejection is factually wrong as the rejection's statements are directly contradicted by substantive evidence already in the record including unrebutted Declarations, and over 140 pounds of exhibits from '457 (hereby also attached for the convenience of the Examiner and the Board which fully addressed all matters criticized by the Office previously sent to the USPTO (and the Applicant has the postal stamps of the USPTO to prove it). These have probative value. Nothing has been presented which differs or rebuts the Declarations.

293. The Examiner's rejection ignores that there is Obligation by the Office to assume that Petitioner's Declarants' unrebutted assertions --made before the Appeal-- are true [Lewis v. Bours, 119 Wn.2d 667, 670, 1992].

294. Thus, the Examiner's rejection ignores the reasoning of Ex parte Porter because the rejection is inconsistent with unrebutted Declarations which did fully address all matters criticized by the Office and which were supplied in the expectation that they would be read, examined, and carefully considered.

Thus, the Examiner's rejection ignores the reasoning of Ex parte Gray [10 USPQ2d 1922, 1928 (Bd. Pat. App. & Inter. 1989)] because there is solid evidence of operability and utility, beyond the detailed specification, in the form of corroboratory expert testimony including said unrebutted Declarations.



Thus, the Examiner's rejection ignores the reasoning of *In re Morris* [127 F.3d 1048, 1053-56, 44 USPQ2d 1023, 1027-30 (Fed. Cir. 1997)] because the interpretation of operability and utility is predicated upon that which one who is skilled-in-the-art would reach.

**The patent should be granted for any of several reasons, including failure of the Office to comply with the authority of Article I, Section 8, Clause 8.**

295. This invention, itself, may initially appear to be de minimis because it involves a solution to the long-standing problem of controlling products from hydrogen loaded metals by using a two-stage method which involves a first stage of electrode loading, and then, a second stage of sudden rapid ("catastrophic") flow of hydrogen within the metal.

However, it is of great and compelling importance when measured by either the particular constitutional mandate of Art. I, §8, cl. 8 or the number of people dependent upon energy monitoring, efficiency and utilization, and alternative energy sources. Congress has spoken to "encourage progress" [*DIAMOND v. CHAKRABARTY*] and to encourage ingenuity [447 U.S. 303, 309] and has performed its constitutional role in defining patentable statutory subject matter to include "anything under the sun that is made by man." There is no doubt that would include inventions involving energy efficiency and energy and material monitoring within the meaning of the statute. The facts here show the Applicant (and Appellant in '457) DID demonstrate operability and utility of the present invention.

The original specification and claims complied and conformed with the requirements of 35 U.S.C. §112, first paragraph, 35 U.S.C. §103 and 35 U.S.C. §101 of the Patent Act. The Examiner has produced no evidence to the contrary pertaining to the original specification and claims. Therefore, the Office has not acted following Congress lead as authorized by Art. I, §8, cl. 8.

## II

The patent should be granted because, as the Affiants and Amici Curiae declare, the Applicant has fully conformed with, and satisfied, the requirements of §101 of the Patent Act and met at least one (1) stated objective [Standard Oil Co. (Indiana) v. Montedison, S.P.A., 664 F.2d 356, 375, 212 USPQ 327, 344 (3rd Cir. 1981), cert. denied, 456 U.S. 915, 102 S.Ct. 1769, 72 L.Ed.2d 174 (1982); E.I. du Pont de Nemours & Co. v. Berkley & Co., 620 F.2d 1247, 1258 n.10, 1260 n.17, 205 USPQ 1,8n10,10n.17 (8th Cir. 1980); Krantz and Croix v. Olin, 148 USPQ 659, 661-62 (CCPA 1966); Chisum on Patents, 4.04[4] [1983]; RAYTHEON COMPANY v. ROPER CORPORATION, U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592].

296. The original specification and claims teach a solution to the long-standing problem of controlling a two-stage method which involves a first stage of electrode loading, and then, a second stage of sudden rapid ("catastrophic") flow of hydrogen within the metal. Applicant taught in the original specification and claims how his apparatus works and claimed the invention.

## III

The patent should be granted because the Office has systematically ignored timely-submitted peer-reviewed proof of operability and enablement at the time of the initial filing [Swartz (97); A136].

297. The invention has been confirmed both in Declarations and the Peer-reviewed Publications. These include, but are not limited to, the following: Swartz, 1994, "Catastrophic Active Medium Hypothesis of Cold Fusion", 4, "Proceedings: "Fourth International Conference on Cold Fusion" sponsored by EPRI and the Office of Naval Research, Swartz (1998), Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes, Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85, Swartz. (1997), Fusion Technology, 31, 63-74.

## IV

**The patent should be granted because the Office has ignored both the standards of review and its own rules, including the standard of review which requires the Office to provide reason to doubt the objective truth of any of the Declarants' statements [Environtech Corp. v. Al George, Inc., 730 F.2d 753, 762, 221 USPQ 473, 480 (Fed. Cir. 1984)].**

298. The Decision does not comport with any notion of fair play or justice. The Office has not properly followed its own standards of review regarding patentability. The unwarranted rejections for putative "lack of operability" under 35 U.S.C. §112, ¶1 and "lack of utility" under 35 U.S.C. §101 has only been made by ignoring the original specification and claims, by misdescribing the invention, by ignoring the timely-submitted unrebutted Declarations, by ignoring scores of Exhibits and references, and by ignoring the Office's own rules, thus creating an arbitrary standard of review for patentability. The putative "indefiniteness" under 35 U.S.C. §112, ¶2 has only been made by ignoring the reasoning of several decisions already in the record, ignoring the Office's own rules, and what those who were skilled-in-the-art at the time the original specification and claims were filed have stated [In re Morris, 96-1425 (Fed Cir, 18 Aug 1997)] in unrebutted Declarations [In re Marzocch (439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971)], which were timely submitted as required [In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992)], and which fully addressed all matters criticized by the Office regarding matters of fact. The original specification and claims complied and conformed with the requirements of 35 U.S.C. §112, first paragraph, and 35 U.S.C. §101 of the Patent Act. The Examiner has produced no evidence to the contrary pertaining to the original specification and claims of the above entitled application.

## V

**The patent should be granted because the Office has disingenuously relied upon reference to art cut of a cloth other than the above-entitled specification and claims. Thus, the Office's position is weak -- which should dictate allowance of the present invention.**

299. By contrast, the present invention has significant utility. Energy needs dominate the economy and welfare of humanity. Claims 1-10, 12-19, 21 and 22 (all pending claims) clearly define subject matter of considerable utility, and Applicant has conformed with the requirements of §101 of the Patent Act. Improving the activity of energy production has utility because it is convincing to one of ordinary skill in the art and Applicant has submitted several Declarations saying the teachings have utility as an invention to measure activity. The Examiner is entitled to his opinion but not to the Facts or to some presumed right to violate US law and the US Constitution in his attempt to subvert said Invention, its specification, subject matter, and claims which meets all said requirements.

300. Appellant notes that the U.S. Supreme Court has ruled that any *pro se* litigant is entitled to less stringent standards [U.S. Rep volume 404, pages 520-521 (72)].

301. The flawed, biased, discriminatory, antiscientific, rejection has inaccurate statements, has ignored the original specification and claims as it has focused on cloth cut of other art, and has ignored the supplied Declarations and a key reference proving enablement at the time of filing. Egregiously to the America public -if not a single member of the august Honorable Board of Patent Appeals- the Examiner-removed/ignored/blackenedout/hidfromtheBoard/redacted specifically those timely-submitted Declarations and credible peer-reviewed scientific publications which did refute the Office. These include the Declarations which also refute the Office and the peer-reviewed published papers which refute the Office, together proving validation both *de jure* and *de facto*.

302. The Examiner has been shown to be wrong in his rejection of Claims 1-10, 12-19, 21 and 22 under 35 U.S.C. 101 because there is credible, well established utility.

@Table Text@The Examiner has been shown to be wrong in his rejection of Claims 1-10, 12-19, 21 and 22 under 35 U.S.C. 112, first paragraph because there is operability.

The Examiner has been shown to be wrong in his rejection of Claims 1-10, 12-19, 21 and 22 under 35 U.S.C. 112, second paragraph.

The Examiner has been shown to be wrong in his rejection of the specification and Claims 1-10, 12-19, 21 and 22 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement

The Examiner has been shown to be wrong in his rejection of the disclosure which is enabling.

The Examiner has been shown to be wrong in his rejection that the "Specification is objected to under 35 U.S.C. 112, first paragraph, for failing to provide a written description of the invention and for failing to adequately teach how to make and/or use the invention, i.e., for failing to provide an enabling disclosure."

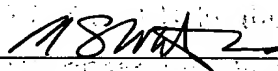
The Examiner has been shown to be wrong in his rejection of Claims 1-10, 12-19, 21 and 22 under 35 U. S. C. 102(b) as being anticipated by Westfall (US 5,215,631), Claims 1, 2, 4, 5, 7, 10, 13, 15, 16 and 21 under 35 U.S.C. 102(b) as being anticipated by Kinsella et al.(US 3,682,806), and Claims 1-8 and 13-16 under 35 U.S.C.102(b) as being anticipated by Patterson (US 5,318,675) or Patterson (US 5,372,688).

303. Thus, the Applicant respectfully requests that reconsideration and reversal of the Examiner's rejections, and allowance of all claims because the rejection has inaccurate statements, has ignored the original specification and claims as it has focused on cloth cut of other art, has ignored most of the supplied Declarations and a key reference proving enablement at the time of filing. Simply put, all claims do not honestly suffer from any justified rejection at this time, and should be allowed to mature into a patent.

WHEREFORE for the above reasons, including submitted Declarations and the peer-reviewed published papers proving validation both de jure and de facto, the Applicant respectfully requests reconsideration and reversal of Claims 1-10, 12-19, 21 and 22 are rejected under 35 U. S. C. 102(b) as being anticipated by Westfall (US 5,215,631), Claims 1, 2, 4, 5, 7, 10, 13, 15, 16 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Kinsella et al.(US 3,682,806), Claims 1-8 and 13-16 are rejected under 35 U.S.C.102(b) as being anticipated by Patterson (US 5,318,675) or Patterson (US 5,372,688), and all Claims 1-10, 12-19, 21, and 22 rejected under 35 U.S.C. 112, 1st and second paragraph and 35 U.S.C. 101 by the Examiner, based upon flawed reference to other art ("FP" or "F+P") rather than the present invention, as is just and reasonable.

The Applicant respectfully requests that reconsideration and reversal of the Examiner's rejections, and allowance of Claims 1-10, 12-19, 21 and 22 (all claims). It has been aptly demonstrated that the Applicant taught in the original specification and claims how his apparatus works and claimed the invention which solves a long-standing problem of controlling products from hydrogen loaded metals by using a two-stage method which involves a first stage of electrode loading, and then, a second stage of sudden rapid ("catastrophic") flow of hydrogen within the metal.

Respectfully submitted,

  
 Mitchell Swartz, ScD, MD, Appellant, *pro se*  
 Weston, MA 02493

# **CERTIFICATE OF MAILING [37 CFR 1.8(a)]**

July 25, 2012

To Whom it Does Concern:

I hereby certify that this correspondence will be deposited with the United States Postal Service by First Class Mail, postage prepaid, in an envelope addressed to

"Office of the Clerk

**Board of Patent Appeals and Interferences**

Box Appeal

Alexandria, VA 22313-1450" on the date below.

Thank you.

Sincerely,



7/25/12



**APPENDIX "A"****A PROCESS FOR CHANGING THE OUTPUT  
OF A HYDROGEN LOADED MATERIAL**

1. In a process for producing a product using a material which is electrochemically loaded with an isotopic fuel, a method of controlling the loading which includes in combination:

loading said isotopic fuel into said material,

then providing means for producing a change in the quantity of said isotopic fuel within said material,

creating thereby a catastrophic diffusion flux of said isotopic fuel within said material,

providing a diffusion barrier to said diffusion flux of said isotopic fuel within said material,

means thereby producing said product.

2. A method as in claim 1 wherein said material is a member of the group consisting of palladium, Groups IVb, Vb, and rare earth elements.

3. A method as in claim 1 wherein said loaded isotopic fuel is a member of the group consisting of deuterium or deuterons.

4. In a process using an isotopic fuel loaded into a material, a two-stage method for controlling the loading which includes in combination:

loading said isotopic fuel into said material,

then providing means for producing a change in the quantity of said isotopic fuel within said material,

creating thereby a catastrophic diffusion flux of said isotopic fuel within said material.

5. (amended) A method as in claim 4 wherein said loaded material is a member of the group consisting of palladium, Groups IVb, Vb, and rare earth elements.

6. A method as in claim 4 wherein loaded isotopic fuel is a member of the group consisting of deuterium or deuterons.

7. A method as in claim 4, where the material is loaded electrochemically.

8. A method as in claim 4, where the said means to produce a change in the quantity of said isotopic fuel within said material is by a change in temperature of said material.

9. A method as in claim 4, where the additional step is taken of obstructing the diffusion flux of said fuel by a diffusion barrier located within said material.

10. A method as in claim 4, where the additional step is taken of removing said product produced.

11. (cancelled without prejudice) A method as in claim 10 wherein said product is heat and said means of removing heat utilizes a member of the group of high thermal conducting devices, including a thermal pipe, a diamond filament, and a polymer filled with diamonds.

12. A method as in claim 10 wherein said means of removing said product utilizes an applied spatially inhomogeneous magnetic field.

13. An apparatus to produce a product using a material loaded with an isotopic fuel, which includes in combination:

means to load said isotopic fuel into said material,

means to produce a change in the quantity of said isotopic fuel within said material,

means to produce a catastrophic diffusion flux of said isotopic fuel within said material,

means thereby to produce said product.



14. An apparatus as in claim 13 wherein the isotopic fuel is a member of the group consisting of deuterium or deuterons.

15. An apparatus as in claim 13 wherein said said material is a member of the group consisting of palladium, Groups IVb, Vb, and rare earth elements.

16. An apparatus as in claim 13 wherein said means to load said isotopic fuel into said material is electrochemical.

17. An apparatus as in claim 13 wherein additional means are provided to obstruct the diffusion flux of said isotopic fuel by a diffusion barrier located within said material.

18. An apparatus as in claim 17 wherein said diffusion barriers are multiple and are arranged as alternating layers of diffusion barriers.

19. An apparatus as in claim 13 wherein the means produce a change in the quantity of said isotopic fuel within said material is by a change in temperature.

20. (cancelled without prejudice) An apparatus as in claim 13 which includes a high modulus incompressible structural barrier surrounding said material filled with said isotopic fuel.

21. A method as in claim 1, where the additional step is taken of removing said product produced.

22. A method as in claim 21 wherein said means of removing said product utilizes an applied spatially inhomogeneous magnetic field.

**APPENDIX "B"**

APPENDIX "B"



## APPENDIX "C"

**BACKGROUND: Examiner's Errors Regarding Lattice Assisted Nuclear (and other) Reactions (i.e. Cold Fusion)**

Fact 16 -LANR, LENR, CF, CMNS Is Real and Now Science and Technology

1. DTRA disagrees with the Examiner. DARPA disagrees with the Examiner. The US Navy disagrees with the Examiner. Thousands of scientists disagree with the Examiner. The Examiner and his supervisor know this.

The literature supports the "existence" of the "cold fusion" effect(s). The Examiner and his supervisor know this.

2. The subject of cold fusion (LANR, LENR, CMNS, by whatever acronym for lattice assisted nuclear fusion) has drawn a reaction historically similar to treating baldness which was once considered by the Office to also to be an inherently unbelievable undertaking. See *In re Ferens*, 417 F.2d 1072, 1074, 163 USPQ 609, 611 (CCPA 1969); *In re Oberwener*, 115 F.2d 826, 829, 47 USPQ 455, 458 (CCPA 1940). Since then, treatments for baldness have gained acceptance with minoxidil and other materials now recognized as effective in treating baldness. The Office must eventually admit that, as in baldness control, the field discussed by the Office where the present invention can be used, does exist. Furthermore, corroborating that fact, the PTO has granted patents in this field, just as they are granted around the world. The continued discrimination against the Applicant is egregious.

The Ahern Declaration states,

**"It is my professional as well as personal opinion that this field is real in spite of opinion of the Patent Office. The early lack of reproducibility combined with the unfortunate early claims of Pons and Fleischman have combined to dis-credit this entire area of investigation.**

As the Hagelstein Declaration states,

**"The scientific results presented by Dr. Mitchell Swartz on his Phusor experiments, in which excess power and total energy is measured, looks very good. His results are competitive in terms of reproducibility and power gain with the best results obtained by other groups around the world. The reproducible en-ergy gains that he has reported are the highest so far reported by any group."**

The Ahern Declaration states,

**"I have known Mitchell Swartz since 1991. I would like to express my strong support for the work being conducted by Dr. Mitchell Swartz in the field of isotopic fuel loading of metal lattices and lattice assisted nuclear reactions. I believe his investigations are some of the most thorough and precise yet con-ducted in isotopic loading and lattice assisted nuclear reactions, and that the thermal effects he is observing are real and will ultimately be useful on a large scale."**

3. There is evidence that "lattice assisted nuclear reactions" [LANR] are real, and offer a clean, efficient potential new source of energy production. Two decades of LANR R&D have confirmed excess heat production, and other clearly nuclear phenomena, using electrolysis and other gas loading techniques. Requirements for success include incubation time, high loading of >90% PdDx, and other requisite conditions difficult to achieve. Several types of LANR now exist, as well as LANR metamaterials, and several types of triggering and control methods. In LANR, excess heat and helium-4 are the usual products, but charged particles, tritium, and the sequelae of neutrons can be sometimes detected. Excess power gains up to 200-400%+ have been reported. Given the prevalence of the fuel, and the incredible efficiency, LANR could be an important revolutionary technology. Lattice assisted nuclear reactions [LANR; refs. 1-44] enable deuterium fusion. It is incredibly clean and free of pollution, all toxic emissions, all carbon footprints, all greenhouse gases, and radioactivity, while obviating fossil fuel. The deuterium is plentiful in the oceans. But the problem with this new technology is that the first published LANR reaction involved the 1989 Pons-Fleischman (Drs. Martin Fleischmann (Southampton, UK) and Stanley Pons (Utah); P-F) experiment which was called "cold fusion" [1,2]. Before that, the term was originally introduced by Benjamin Franklin for fulgurites, created by atmospheric lightning discharging into sand. Rather than agglomerating sand, LANR's core is quite different, involving a metal,

like palladium, loaded fully with heavy hydrogen [45-51], obtained either from deuterons from heavy water or gaseous deuterium.

4. Cold fusion was superficially investigated in March 1989. P-F announced that the "electrochemical experiments" they had conducted had produced more energy ("excess energy") than could be accounted for, either by input energy or by available chemical reactions. They speculated that nuclear reactions were involved. Attention was directed to CF which savaged its messengers for global sensation and to benefit special interests. Was there a substantive basis for this attack? Fusion had not been explored, and was not known to occur, at low temperatures or in solids in a lattice. High energy theoretical physics never involved a lattice in the nuclear calculations. And yet, in favor of LANR, this was not the first time a lattice was involved with coupling to nuclear effects. Mossbauer effects [52-54] preceded cold fusion, as were other physics and engineering calculations which would eventually prove cold fusion is consistent with physics. Although the Mossbauer effect involves nuclear decay, it also shows a coherent momentum coupling to the lattice as a whole. The relevance to LANR is not the nuclear decay versus nuclear fusion, but the fact that the Mossbauer effect actually heralds one real existing case of nuclear lattice coupling. It is an example of a coherent linkage between the nuclei and electronic s-orbitals bathing them, coupling them to the entire solid state lattice. It demonstrates that the lattice is important in this branch of nuclear physics and must be considered, even if it was not previously.

5. Much peer-reviewed, and other, art is available in Fusion Technology [e.g. Swartz, 1998, Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes, Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85, dispute the Office. The chief product of the cold fusion reaction(s) is excess heat, but other released particles have also been reported {including tritium [Srinivasan, Current Science, 143 (1991); Storms, Fusion Technology, 17, 680 (1990)], sparse neutrons [Gozzi, J. Fusion Energy, 9, 241 (1990); Menlove, J. Fusion Energy, 9, 495 (1990)], helium-4 [Bush, J. Electro. Chem., 304, 271 (1991)], and possibly heavy elements [Matsumoto, Fusion Technology, 20, 323 (1991)]}. The following is up to date information. The Examiner is referred to the Applicant's

peer-reviewed article in the Journal of Scientific Exploration (Winter 2009, January 2010), "Survey of the Observed Excess Energy and Emissions In Lattice Assisted Nuclear Reactions".

6. Despite what the Examiner has purported, LANR is a real science, and heat is generated of significant use. The Examiner, the Board, and the court, are referred to:

**Cravens, Dennis, and Dennis Letts, "The Enabling Criteria of Electrochemical Heat: Beyond Reasonable Doubt", 71, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).**

**Celani, Francesco, P. Marini, V. Di Stefano, A. Spallone, M. Nakamura, E. Purchi, O. M. Calamai, V. Andreassi, E. Righi, G. Trenta, A. Marmigi, G. Cappuccio, D. Hampai, F. Todarello, U. Mastromatteo, A. Mancini, F. Falcioni, M. Marchesini, P. Di Biagio, U. Martini, P. G. Sona, F. Fontana, L. Gamberale and D. Garbelli, "Deuteron Electromigration in Thin Pd Wires Coated With Nano-Particles: Evidence for Ultra-Fast Deuterium Loading and Anomalous, Large Thermal Effects", 385, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).**

**Dardik, I. T. Zilov, H. Branover, A. El-Boher, E. Greenspan, B. Khachaturov, V. Krakov, "Ultrasonically-Excited Electrolysis Experiments at Energetics Technologies", 106, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).**

**Swartz, M., G. Verner, "Dual Ohmic Controls Improve Understanding of 'Heat after Death'", Transactions American Nuclear Society, vol. 93, ISSN:0003-018X, 891-892 (2005).**

**Swartz, M., 1996, "Possible Deuterium Production From Light water excess enthalpy experiments using Nickel Cathodes", Journal of New Energy, 3, 68-80 (1996)**

**Swartz, M., G. Verner, "The Phusor®-type LANR Cathode is a Metamaterial Creating Deuteron Flux for Excess Power Gain", Proceedings of the 14th International Conference on Condensed Matter Nuclear Science and the 14th International Conference on Cold Fusion (ICCF-14), 10-15 August 2008, Washington, D.C. Editors: David J. Nagel and Michael E. Melich, ISBN: 978-0-578-06694-3, 458, (2010).**

**Swartz, M.R., "Metamaterial Shaped LANR-Cathodes Produce Deuteron Flux", Infinite Energy, (2010)**

**Swartz, M.R., "Excess Power Gain using High Impedance and Codepositional LANR Devices Monitored by Calorimetry, Heat Flow, and Paired Stirling Engines", Proceedings of the 14th International Conference on Condensed Matter Nuclear Science and the 14th International Conference on Cold Fusion (ICCF-14), 10-15 August 2008, Washington, D.C. Editors: David J. Nagel and Michael E. Melich, ISBN: 978-0-578-06694-3, 123, (2010).**

**Swartz, M.R., "Electrical Breakeven from LANR Phusor Device Systems: Relative Limitations of Thermal Loss in Feedback Loop", Proceedings of the 14th International Conference on Condensed Matter Nuclear Science and the 14th International Conference on Cold Fusion (ICCF-14), 10-15 August 2008,**

- Washington, D.C. Editors: David J. Nagel and Michael E. Melich, ISBN: 978-0-578-06694-3, 689, (2010).
- Swartz, M., 1998, Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes, Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85
- Swartz, M., 1998, Patterns of Failure in Cold Fusion Experiments, Proceedings of the 33RD Intersociety Engineering Conference on Energy Conversion, IECEC-98-I229, Colorado Springs, CO, August 2-6, 1998
- Swartz, M.R. "Survey of the Observed Excess Energy and Emissions In Lattice Assisted Nuclear Reactions", Journal of Scientific Exploration, 23, 4, 419-436 (2009)
- Swartz, M.R., "Excess Heat and Electrical Characteristics of Type "B" Anode-Plate High Impedance Phusor-type LANR Devices", American Chemical Society, Salt Lake City, UT, Journal of Scientific Exploration, 23, 4, 491-495 (2009)
- Swartz, M., 2002, G. Verner, A. Frank, "The Impact of Heavy Water (D<sub>2</sub>O) on Nickel-Light Water Cold Fusion Systems", Proceedings of the 9th International Conference on Cold Fusion (Condensed Matter Nuclear Science), Beijing, China, Xing Z. Li, pages 335-342. May (2002).
- Swartz, M., G. Verner, "Excess Heat from Low Electrical Conductivity Heavy Water Spiral-Wound Pd/D<sub>2</sub>O/Pt and Pd/D<sub>2</sub>O-PdCl<sub>2</sub>/Pt Devices", Condensed Matter Nuclear Science, Proceedings of ICCF-10, eds. Peter L. Hagelstein, Scott, R. Chubb, World Scientific Publishing, NJ, ISBN 981-256-564-6, 29-44; 45-54 (2006).
- Swartz, M., 1997, "Noise Measurement in cold fusion systems, Journal of New Energy, 2, 2, 56-61; Swartz, M., 1996, "Definitions Of Power Amplification Factor", J New Energy, 2, 54-59
- Swartz, M., 1997, "Consistency of the Biphasic Nature of Excess Enthalpy in Solid State Anomalous Phenomena with the Quasi-1-Dimensional Model of Isotope Loading into a Material" Fusion Technology. 31, 63-74
- Swartz, M., 1997, "Biphasic Behavior in Thermal Electrolytic Generators Using Nickel Cathodes". IECEC 1997 Proceedings, paper #97009
- Swartz, M., "Can a Pd/D<sub>2</sub>O/Pt Device be Made Portable to Demonstrate the Optimal Operating Point?", Condensed Matter Nuclear Science, Proceedings of ICCF-10, eds. Peter L. Hagelstein, Scott, R. Chubb, World Scientific Publishing, NJ, ISBN 981-256-564-6, 29-44; 45-54 (2006).
- Swartz, M., 1997, "Codeposition Of Palladium And Deuterium", Fusion Technology, 32, 126-130 (1997)
- Swartz, M., "2007 Colloquium on LANR at MIT", Infinite Energy, (2007).
- Swartz, M., "2009 Colloquium on LANR at MIT, Infinite Energy, 87, 50-52, (2009).

7. Despite what the Examiner has purported, LANR is a real science, and although the Examiner attempts to destroy this field with his unsupported notions, work in the last several decades has revealed a significant new nuclear solid state optical quantum physics. The Examiner, the Board, and the court, are referred to

**Letts, Dennis and Peter Hagelstein, "Stimulation of Optical Phonons in Deuterated Palladium", 333, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).**

**Tsuchiya, Ken-ichi, Aya Watanabe, Masao Ozaki and Shigeru Sasab, "Observation of Optical Phonon in Palladium Hydrides Using Raman Spectroscopy," 338, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).**

**Tian, L. H. Jin, B. J. Shen, Z. K. Weng and X. Lu, "Excess Heat Triggering by 532 nm Laser in a D/Pd Gas-Loading System", 328, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).**

**Swartz, M.R., Gayle Verner, Alan Weinberg, "Non-Thermal Near-IR Emission from High Impedance and Codeposition LANR Devices", Proceedings of the 14th International Conference on Condensed Matter Nuclear Science and the 14th International Conference on Cold Fusion (ICCF-14), 10-15 August 2008, Washington, D.C. Editors: David J. Nagel and Michael E. Melich, ISBN: 978-0-578-06694-3, 343, (2010).**

**Swartz, M., 1997, "Phusons in Nuclear Reactions in Solids", Fusion Technology, 31, 228-236 (March 1997)**

**Swartz, M., P. Hagelstein, Optics and Quantum Electronics, MIT RLE Progress Report, 139: 1, 1-13 (1997).**

**Swartz, M., G. Verner, "Photoinduced Excess Heat from Laser-Irradiated Electrically-Polarized Palladium Cathodes in D<sub>2</sub>O", Condensed Matter Nuclear Science, Proc. ICCF-10, eds. Peter L. Hagelstein, Scott Chubb, NJ, ISBN 981-256-564-6, 213-226 (2006).**

**Swartz, M., "Dances with Protons - FERROELECTRIC INSCRIPTIONS IN WATER/ICE RELEVANT TO COLD FUSION AND SOME ENERGY SYSTEMS", Infinite Energy, 44, (2002)**

8. Despite what the Examiner has purported, LANR is a real science, and there are real nuclear products. The Examiner, the Board, and the court, are referred to:

**Karabut A. B. and E. A. Karabut, "Research into Spectra of X-ray Emission from Solid Cathode Medium During and After High Current Glow Discharge Operation", 362, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).**

**Oriani, R. A. "Reproducible Evidence for the Generation of a Nuclear Reaction During Electrolysis", 250, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).**

**Stringham, Roger "Investigation of Radiation Effects at Bubble Cavitation in Running Liquid", 418, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).**

**Szpak, S., P. A. Mosier-Boss, F. Gordon, J. Dea, J. Khim and L. Forsley, "SPAWAR Systems Center-Pacific Pd:D Co-Deposition Research: Overview of Refereed LENR Publications", 772, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).**



Jiang, Songsheng, Jinghuai Li, Ming He, Shaoyong Wu, Jianqing Wang, Hongtao Zhang, Shunhe Yao, Yonggang Zhao and Chen Wang, "New Results of Charged Particles Released From Deuterium-Loaded Metal at Low Temperature", 299, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).

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Swartz, M.R., "Optimal Operating Point Manifolds in Active, Loaded Palladium Linked to Three Distinct Physical Regions", Proceedings of the 14th International Conference on Condensed Matter Nuclear Science and the 14th International Conference on Cold Fusion (ICCF-14), 10-15 August 2008, Washington, D.C. Editors: David J. Nagel and Michael E. Melich, ISBN: 978-0-578-06694-3, 639, (2010).

Swartz, M., "Three Physical Regions of Anomalous Activity in Deuterided Palladium", Infinite Energy, 14, Issue 61, 19-31 (2008).

9. Despite what the Examiner has purported, LANR is a real science, and there are several theories which have moved this field ahead. The theories are NOT mutually exclusive, but handle different aspects of a complex new methodology. The Examiner, the Board, and the court, are referred to:

Takahashi, Akito "Dynamic Mechanism of TSC Condensation Motion", 663, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).

Kasagi, J. "Screening Potential for Nuclear Reactions in Condensed Matter", 318, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).

Hagelstein Peter L and Irfan U Chaudhary, "Excitation Transfer and Energy Exchange Processes for Modeling The Fleischmann-Pons Excess Heat Effect", 579, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).

Scott R. Chubb, "Resonant Electromagnetic-Dynamics Explains the Fleischmann-Pons Effect", 521, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).

Yamaguchi, T. Y. Sasaki, T. Nohmi, A. Taniike, Y. Furuyama, A. Kitamura and A. Takahashi, "Investigation of Nuclear Transmutation Using Multilayered CaO/X/Pd Samples Under Deuterium Permeation", 195, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).

Chubb, Talbot A. "Interface Model of Cold Fusion", 534, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).

Kim, Yeong E. "Theory of Low-Energy Deuterium Fusion in Micro/Nano-Scale Metal Grains and Particles", 604, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).

Swartz, M, G. Verner, 1999, "Bremsstrahlung in Hot and Cold Fusion", J New Energy, 3, 4, 90-101 (1999)

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- Swartz, M.R. and L. Forsley, "Analysis and Confirmation of the "Superwave-as-Transitory-OOP-Peak" Hypothesis", Proceedings of the 14th International Conference on Condensed Matter Nuclear Science and the 14th International Conference on Cold Fusion (ICCF-14), 10-15 August 2008, Washington, D.C. Editors: David J. Nagel and Michael E. Melich, ISBN: 978-0-578-06694-3, 653, (2010).
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- Swartz, M., "A BRIEF ANALYSIS REGARDING BREAK-EVEN FOR COLD FUSION AND OVERUNITY ENERGY SYSTEMS - The Case for Science Before Attempting Break-even", Infinite Energy, 41, 66-68, (2002).

10. In the following review, the numbers in brackets [ ] refer to the references below. They all demonstrate the Office notion is wrong. In 1989, most efforts failed because of flawed paradigms, cracked inactive palladium cathodes, contamination (including from ordinary water), and most often, improper cell configurations, inadequate or questionable loadings, and incubation times. The patterns of failure have been many and have been discussed in detail elsewhere [1,38]. Although, in 1989 the physics community did not believe the initial P-F experiments since fusion was not known to occur at low temperatures or in solids. Today, the experimental facts rule. The initial failures, some which took years to understand, involved bad paradigms, questionable materials and loadings, but that is now resolved. Particle emission, excess energy, power gain, commensurate linked helium-4 production, increasing power gains and total energies achieved since 1989, all pave the way to an important, new, clean form of energy production: LANR.

Two decades of R&D, sub rosa, have investigated LANR phenomena ranging from excess heat production (far above the input), very low level but measurable

emissions, thin films, and coupling to motors and electricity production systems. A few hundred credentialed scientists with diverse backgrounds continued to conduct careful experiments as they performed detailed data analyses using improved instrumentation, equipment, calibration, and controls. No single error or combination of errors on the part of all of the scientists can explain the developing results. They have been reported in over 3000 papers [55]. This paper will review a small, but worthwhile, fraction of the worldwide experimental work which saliently provides much compelling evidence that nuclear reactions can be assisted by a metallic lattice, PdDx.

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11. LANR is consistent with conventional physics. The LANR-derived 'excess energy' begin at high energy, in the excited state of Helium, which is obtained from reactions between deuterons within the lattice. That helium-4 excited state is either the first excited state, or one energetically located above it, all at least 20 million electron volts (20 to ~23+ MeV) above the ground level. This is significant in magnitude and clearly not "low energy", as often (mis)claimed. As such purported "low energy nuclear reactions (LENR)" are a misnomer, a paradoxical description of what is actually not observed. Furthermore, if these are low energy reactions, why even bother? Fortunately, they are high energy reactions.



12. Today, LANR research involves electrolytic (with solution resistance ranging from conventional to 'high impedance' devices in the range of 200,000 ohms), gas loading, gas permeation, ion beam and glow discharge loading techniques and devices. They run in both open and closed systems, at pressures up to 10,000 psi, and driving motors, with on-line monitoring, redundant, high precision, time-resolved semiquantitative calorimetry. What has been learned? That LANR is real and generated in one of three different sites within the solid state, deuteron-loaded, metallic palladium lattice [42]. Each location has its own, differing, rate of excess heat, tritium, and helium production and appears to be linked to a different group of optimal operating point [OOP] manifolds characterizing active LANR samples and devices [39-44].

13. The fuel for LANR is the deuteron. It is driven into the metal by the applied electric field intensity or by gas pressure applied. In most cases, the product is an extraordinary amount of heat. Commensurate with the amount of excess heat is the "ash", usually de novo helium-4. The important point is that from those high energy levels of  $\text{He4}^*$  made in LANR come the observed excess energies in those difficult-to-achieve loaded lattice conditions, under some conditions. These reactions are complex, and under some conditions, tritium and other emissions result. Some of the variety of regions involved both within, and upon, the metallic lattice is shown in Figure 1 [42]. Like hot fusion, the keys are containment, time, and density, but with flux substituted for temperature [43,44,37,1,56, for example]. This first key for LANR is that the PdDx alloy must be driven, usually electrically, to extremely high loading, until it is filled and almost bursting like a sponge with water. The electrode must accept and maintain high loading for excess heat (>90%), for a sufficient incubation time, up to several hundred hours. Why? Vacancies must drift into the bulk from the surface, slightly facilitated by the loading itself [7, 56, 57, 58].

14. The additional keys for LANR are that there must be integrity of the loaded alloy; a condition difficult to achieve, although it is circumvented to some degree by the codeposition methods, albeit with their limitations [7,5]. As the lattice loads, it swells. Too much swelling yields irreversible failure, just like a swollen, burst, balloon. Another requirement is that deuteron flux must continue, within and through the already highly loaded lattice. LANR success is rewarded by "excess

heat", which means that the energy producing reactions, have generated de novo helium into the lattice, ( $\sim 10^{12}$  for every watt-second), and those conditions were adequate to enable energy transfer to the lattice. LANR success also means that significant energy (think,  $E=mc^2$  from the tiny difference between D2 and He4) is released rather than the low energy released by "burning" the deuterons into heavy water. There is more heat released than if the entire cathode were substituted for an equivalent quantity of TNT, but in this case it is safe, clean, and efficient.

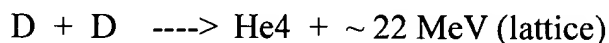
15. The LANR method which P-F first taught in March 1989 had problems, including inefficient reproducibility, and a requirement for very high loading with long incubation time. This created havoc for those inexperienced in metallurgy, electrochemistry and physics. Today, briefly, there are several types of LANR; conventional (F+P), two types of codeposition (JET Energy, SPAWAR), dual cathode (Arata) systems, and a variety of other loading systems. On one hand, development for high power has led to today's high electrical solution resistivity LANR systems (very low levels of electrolysis yield superior excess heat levels pioneered by JET Energy) and then LANR metamaterials (JET Energy; 59). Metamaterials use shapes engineered to control deuteron flux, even at equilibrium, and even after loading, such as shown in Figure 2. The Phusor® spiral cathode system, with its open helical cylindrical geometry, in a high electrical resistance solution, creates a unique and unusual electric field distribution [59]. There is an anomalous effect in those portions of the cathode closest to the anode. This results in both deuteron loading flux from the solution to the electrode, and intra-palladium deuteron flux [59].

This configuration is a new kind of Pd/D2O/Pt and Pd/D2O/Au engineered LANR structure with impressive energy gain and fairly good reproducibility [4, 7, 10, 60]. These contain low paramagnetic content heavy water creating a unique, distinguishing electric field distribution quite different from customary wire-wire and plate-plate systems. LANR metamaterials, and high loading systems (included those explored by IENA, Energetics) and metallurgically engineered electrodes (NRL, SPAWAR, JET Energy) all point the way to high output powers and efficiencies.

16. On the other hand, codeposition LANR systems (see '976) point the way to speedy onset for some of the reactions. Codeposition yields faster results without the prolonged incubation times. In codeposition systems, fresh Pd and D plate out together on the cathode. Highly expanded surfaces, nanoscale spherical nodules dominate on the growing surface. Cyclic voltammetry and galvanostatic pulsing experiments indicate, and excess heat measurements herald, that a high degree of deuterium loading (with an atomic ratio  $D/Pd > 1$ ) is obtained within seconds. The results to date indicate nuclear reactions which occur very near the surface of the electrode (within a few atomic layers). In the original JET Energy Pd/D codeposition process, working and counter electrodes are immersed in a solution of palladium solution with neither chloride nor lithium, deposited on palladium. In the SPAWAR Pd/D codeposition process, working and counter electrodes are immersed in a solution of palladium chloride and lithium chloride in deuterated water, deposited onto silver, gold, or copper. There are physical differences in the two types involving deep diffusion [5], where Pd is deposited either on palladium (like Dr. Swartz) or upon non-loading materials such as copper, gold, silver, or platinum (like SPAWAR).

17. SPAWAR and JET have investigated the physical changes, the excess heat generation, hot spots with calibration showing near and far IR emission (Figure 3). JET Energy's and SPAWARS (near- and medical IR imaging) have revealed that in LANR there are cathodic hot spots, and not just Joule heating in the solution (IR drop). The desired reactions producing excess energy yield localized hot spots (Szpak). The calibrated imaging of these localized hot spots, using an infrared camera, reveal non-thermal near-IR emissions correlated with excess heat (Swartz) in active LANR devices by in situ monitoring [ref. 11; Figure 3]. This discovered non-thermal IR (NT-NIR) is linked, and specific, to the presence of excess heat production and not their physical temperature. This confirms the Swartz-Verner hypothesis that in LANR, unlike hot fusion, Bremsstrahlung emission, under increasingly lower temperatures, shifts from penetrating ionizing radiation toward skin-depth-locked infra-red radiation [61].

18. In LANR, excess heat and helium-4 are the usual products, but charged particles, tritium, and the sequelae of neutrons can be sometimes detected. Excess heat and helium production are the dominant reactions. Melvin Miles of China Lake with Johnson-Matthey Pd rods was the first to show the correlation of heat and helium-4 production. Arata and Zhang reported de novo He-4 with LANR, including with ZrO<sub>2</sub>/Pd powder exposed to deuterium gas, but not with hydrogen gas. Les Case (28; NH), using LANR with platinum group metals on carbon catalysts, reported He-4 production from deuterium gas. As a result of these findings, but ignoring the impact of the lattice for the moment, the reaction is something like



19. Energy and momentum are conserved in LANR [63,62,49], and because of the unique relationship to the lattice, the helium generated is moving slowly, at low velocity, very unlike hot fusion (discussed below). The He-4 which appears is retained in the cathode, until very high temperatures (~850C). The peak energy is consistent with the relatively low energy, but penetrating, ionizing radiation. Miles (China Lake, USN) and M. Srinivasan (Bhabha Atomic Research Center, BARC) independently used dental x-ray films on the outside of his apparatus; they became fogged indicating low energy x-ray production. In rare conditions, tritium production has been seen. In India, M. Srinivasan from the (BARC) reported tritium in 1989. John Bockris (Texas A&M) reported tritium in bursts but the tritium was not accompanied by measurable heat, which he measured in other experiments. Szpak (SPAWAR) in open cells reported 3000 to 7000 atoms per second for a 24 hour period. Ed Storms (LANL) reported excess tritium in ten percent of his cells.

20. Some experiments have detected very low number neutrons and charged particles with short range. M. Srinivasan (BARC) reported neutrons in 1989. As the current increased beyond 100 amperes, neutron signals, in bursts, resulted in six of 11 cells. X.Z. Li (Tsinghua U) first used CR-39 in his 1990 Pd gas loading experiments to detect energetic charged particles [64]. CR-39 is a polyallyldiglycol carbonate polymer, widely used as a time-integrating, solid state, nuclear track detector. Larry Forsley (JWK International) and Mosier-Boss (SPAWAR) have reported D-D and D-T possible reaction pathways capable of generating the observed

charged particles, neutrons, etc. Their CR-39 tracks indicate possible neutron interactions, including carbon shattering. Some tracks herald D-D and DT reactions. Etching suggests uniformity in the 2-8 MeV range. The triple tracks, found in ~5-10 of their experiments, indicate energetic neutrons having shattered a carbon atom. Also observed in LANR systems are post LANR mini-explosions, ionizing radiation, and neutron production, and tritium production. These observations of significant quantities of high energy charged particles, and emissions, in LANR systems, suggests that there is accumulating, near overwhelming, evidence that nuclear reactions in, and assisted by a lattice, are initiated at low energies.

21. P-F reported excess energies of 4 MJ (megajoules) in 80 hours. Similar amounts are seen in Figures 4 and 5. Several LANR devices show excess power gains from 25% to several times input electrical power, beyond the controls. High impedance LANR devices have shown power gains 200% to 400%, and one has yielded 8,000% power gain for a short time. JET Energy has shown that some electrodes, of specific shape, are metamaterials which produces excess heat of a superlative magnitude, successfully driving Stirling engines at the 1-19+ watt level [3,4,6,7,39,40,41]. In 2003, JET demonstrated a working LANR high impedance PHUSOR-type LANR systems for five days at MIT at ICCF10, producing ~230% excess energy at 1 to 2 watt level. Confer

**Affidavit-258-Hagelstein-2010.pdf,**  
**Affidavit-937-McKubre-AmicusBrief-2001.pdf,**  
**Affidavit-937-Rotegard-AmicusBrief-2001.pdf,**  
**Affidavit-Hagelstein-2007.pdf,**  
**Affidavit-Mallove-FromtheFront-2003.pdf,**  
**Affidavit-miranda-2003.pdf,**  
**Affidavit-NRLonSwartz-2006.pdf,**  
**LANRpub-LENR\_DIA.pdf,**  
**Swartz - PdD2O.pdf,**  
**and Swartz-DualOhmicControl11-030.pdf.**

22. The most important point is that even if one were to replace the entire cathode with TNT, one would only get 1.2 KJ (kilojoules) on explosion. The excess energy observed with LANR is greater than any known chemical reaction. The second most important point is that the excess energy brings heat and changes wrought upon the electrode. SPAWAR, JWK, Stringham, Dash and others have reported volcano looking pits in electrodes. These induced pits are important for two reasons. First,

these features require a lot of local heat to produce the focal melting of the Pd, require substantial energy expenditure in order to form, again consistent with a nuclear source, not chemical. Second, SPAWAR [12, 20, 22, 23], Mitsubishi Industries (Japan) [37], George Miley [U of Illinois, 65], and others have shown elements appearing only at these unusual sites, which are consistent with nuclear, possibly even fission, products, some of which could not be extracted from cell components.

23. Theories Involving Portions of LANR - It cannot be true that only one single "theory" will fit all the solid state, nuclear physics and requisite electrical engineering. They involve a complex non-linear, time-variant, system including an overloaded metal lattice, stirring with flux, and electrical currents involving both electrons and deuterons and their holes. In time, also formed are low dielectric constant layers appearing spontaneously in electrical series (bubbles). There are second order applied fields. This is in addition to the electric fields, magnetic fields, and electromagnetic fields including optical, terahertz and other irradiations, which LANR experimentalists use, which result from the drifting electrons, deuterons, and their holes. The bottom line is that no one theory can ever cover it all. Instead, there are several, and they fit conventional physics quite well [31,44,56,58,62, 63,69,70,71,72,73,74].

The quasi-one-dimensional (Q1D; 39-44) model of loading, based on continuum electromechanics, has led to the discoveries of optimal operating points and the key roles of D-flux, solution conductivity, and cathodic irradiation by laser in LANR systems. Recently, coupling this with Laplace's law has uncovered the need for deuteron flux within the palladium in an already highly loaded (D/Pd) LANR system. The Q1D models most important insight is that the first order D-flux equation, with the substitution of the Einstein relation, shows that the ability to load D depends on the ratio of ordering energy, (the applied electric field) to thermal disorder ( $k_B T$ ) minus what goes up into the gas. The latter is perhaps most important because it reveals why so many have failed to generate successful LANR, because the name "fusion by electrolysis" is a misnomer.

24. How is fusion achieved? Are there 'expected products'? In hot fusion without a lattice, the kinetic energy of 23.8 MeV charged particles (alphas) yields ionizations, Pd knock-off atoms, low energy X-rays, and heat. Secondary neutrons [by  $D(\alpha, n)$ ] have a small cross-section. Most physicists are more aware of the ionization and X-ray production of  $D + D$  impact physics without a lattice. In this hotter fusion, the products are fast moving helium [23.8 MeV alpha-particles] which yield 22 keV Pd K shell X-rays and bremsstrahlung below  $\sim 4$  keV. Conventional bremsstrahlung is ionizing penetrating radiation well-associated with hot fusion. In  $D + D$  impact physics without a lattice, neutrons and charged particles (fast moving helium ions, alpha particles) are seen.

In summary, in hot fusion, the production ratios are about 50% neutrons with  $He^3$ , 50% tritium and a proton, and a tiny fraction (less than  $1/1,000,000$ ) as nuclear gamma rays. By incredible contrast, the production ratios observed for LANR reactions is mainly  $He^4$ , and negligible  $He^3$ , neutrons and gammas of very low energies.

25. Historically, since 1989, cold fusion was ignored, along with the scientific facts, generally speaking. The basic truth is that the temperature of cold fusion, lattice and the nuclear isospin control which products are observed. The physics in LANR appears conventional, but band energies, lattice and isospin issues, and temperature dependences must be addressed. First, not all emission branches from the excited state of  $He^4^*$  are even spin-available. The gamma emission branch from the excited state of  $He^4^*$  is actually spin-forbidden for both hot and cold fusion [62,63]. However, at higher hot fusion temperatures the restriction is lifted slightly. This is consistent to what is seen for both hot and cold fusion.

Second, the relative absence of neutron and hard gamma-ray penetrating radiation in cold fusion appears to be due to the lack of availability for two different, but thermally linked, reasons. The first thermally linked reason is that the only nuclear branches available are those whose band gaps are surmountable by the available activation energy (limited by the ambient temperature and incident radiation). The neutron emission branch is more than 1 MeV above the first excited state ( $He^4^*$ ). Hot fusion has large activation energies available (it is 'hot'). LANR/CF is not. In LANR, given the actual much smaller amount of thermal energy,  $k_B T$ , available for

cold fusion ( $\sim 1/25$  eV), absence of adequate activation energy decisively means that that branch is NOT available, as it is for hot fusion. Neutrons are not observed, helium 4 production is in its stead.

The second thermally linked reason is that in the analysis for LANR, with the explicit incorporation of temperature into the Bremsstrahlung equations, reveals that ionizing penetrating radiation by Bremsstrahlung is not expected at low temperature. The Bremsstrahlung shift (secondary to temperature and lattice availability) alters from what is expected at room temperature with the forward deposition of energy dropping by 18 orders of magnitude. Instead, at cold fusion temperatures, the penetrating ionizing radiation shifts to lower frequencies [to the near infrared (N-IR)] where the radiation is not longer ionizing, and where it is trapped in the palladium by the 'skin-depth' effect. In fact, this shift to near-IR was later observed (and reported) in LANR devices when they were operated at their OOP. The result is non-thermal near-IR emission [11].

26. It is the lattice which is key to the final products. It controls the de-excitations to produce He4 in the ground state if there is coupling to though phonons. In hot fusion, the lattice --and therefore the coupling-- are not there. In LANR/CF, the fast moving He4 (as charged particles, alphas) are not seen because the phonons, each about 35-43 millieV, help the He4\* state shed  $\sim 20+$  MeV to return to the He4 ground state [7, 71, 57, 38, 58]. However, in a coherent lattice, if there are enough phonons to enable transfer in the nanoseconds required. Hence the "excess heat". Ergo, it is the lattice that opens up the new pathway. The many-spin, spin boson model [61, 58] has led to discoveries of how exchange energy between oscillator quanta enable coherent energy exchange. One sine qua non is there be enough phonons (lattice vibrations) [7, 71, 75, 57, 38, 58]. If they act coherently, and if there are enough Frenkel defects, then the lattice appears to be "oiled" enough for coherent energy transfer (this is from where the excess heat arises) from the very high energy nuclear state consisting of the nuclear helium excited state to the lattice [58, 62, 70, 7]. The CAM (catastrophic active media [56]) theory models the unusual change in deuteron solubility that Pd demonstrates with temperature.



## APPENDIX "C2"

### === ERROR BY EXAMINER REGARDING REPRODUCIBILITY

The Office purports non-"reproducibility" of these phenomena, as a "reason" for rejection. However, there are several errors with this logic and new argument.

First, the Examiner's and his cited art's arguments are clouded by the two different meanings of the word(s) "(not) reproducible". In the parlance of the Office, when referring to "cold fusion", the word(s) "(not) reproducible" are a euphemism for "wrong". When used more generally, however, these words can even apply to scientific (and medical) fields which actually do engender respect and/or validity, and where "reproducible" only refers to the number of samples in a cohort developing the desired effect. The restriction that the Office creates using the word "reproducible" in the present case would obviously create unreasonable hurdles for inventors in such fields as cancer treatment, meteorology, or the sciences of earthquakes, lightning, sunspots, or solar storms.

The Ahern Declaration states,

**"In 1987 I was charged with the duty to survey the field of the new superconduc-tors which were at first a great shock to experts in the field. I was selected for this work in part dues do to my M.S. thesis in the field of low temperature Physics. It is merely coincidental that my thesis topic was based on loading palladium alloys with hydrogen and deuterium and measuring the supercon-ducting transition temperatures. My two-year survey concluded that the theo-retical underpinnings of superconduction were sadly lacking. The BCS theory was not only incapable of predicting the occurrence of the YBCO materials, it was incapable of making a priori predictions for any arrangement of matter. This observation regarding the lack of understanding in low temperature phys-ics is not widely known. This lack of first principles level of understanding has been of little concern to experimentalists and has not discouraged extensive re-search support."**

Second, despite the erroneous logic of the office, radiation therapy accounts for the cure of more than 60% of adults afflicted with solid tumors composed of malignant disease, and obtunds the pain in 80% (or more) of patients treated palliatively, there is almost always a clinical effectiveness. Yet it is not possible to know in advance which patients are going to be cured nor is it necessarily reproducible in any single patient. Thus there is clinical proof and utility, despite the lack of reproducibility in any single individual or cohort of patients. Thus, the claim that "reproducibility" must necessarily be absolute for there to be "utility" is also simply not true. Would the Examiner withhold curative treatment of a patient --of their own family member-- because such therapy is not "reproducible"? In summary, if the Office throws out cold fusion patent applications because there is not 100% reproducibility for each experiment, then probably all of the pharmaceutical and biomedical device patents should, for similar reasons, be voided *nunc pro tunc*.



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Advanced Systems and Concepts Office  
**FINAL REPORT**

## *High Energy Science & Technology Assessment*

June 29, 2007

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DTRA01-03-D-0017/Task Order 18-05-14

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# **High Energy Science and Technology Assessment**

## **FINAL REPORT**

**June 29, 2007**

**Prepared for:**



**Defense Threat Reduction Agency  
Advanced Systems and Concepts Office**

**Contract No: DTRA01-03-D-0017**

**Task Order 18**

**Technical Instruction 18-06-11**

**Prepared by:**

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**SPONSOR:** Defense Threat Reduction Agency  
Dr. James Tegnella  
Director

Advanced Systems and Concepts Office  
Dr. Michael Wheeler  
Director

**BACKGROUND:** The Defense Threat Reduction Agency (DTRA) was founded in 1998 to integrate and focus the capabilities of the Department of Defense (DoD) that address the weapons of mass destruction threat. To assist the Agency in its primary mission, the Advanced Systems and Concepts Office (ASCO) develops and maintains an evolving analytical vision of necessary and sufficient capabilities to protect United States and Allied forces and citizens from WMD attack. ASCO is also charged by DoD, and by the U.S. Government generally, to identify gaps in these capabilities and initiate programs to fill them. It also provides support to the Threat Reduction Advisory Committee (TRAC), and its Panels, with timely, high quality research.

**ASCO ANALYTICAL SUPPORT:** Science Applications International Corporation has provided analytical support to DTRA since the latter's inception through a series of projects on chemical, biological, and nuclear weapons issues. This work was performed for DTRA under contract DTRA01-03-D-0017, Task Order 18.

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**REPORT:** The publication of this document does not indicate endorsement by the Department of Defense, nor should the contents be construed as reflecting the official position of the sponsoring agency.

## TABLE OF CONTENTS

<b>1. Executive Summary.....</b>	<b>5</b>
<b>2. Introduction.....</b>	<b>7</b>
<b>3. Workshop Overview.....</b>	<b>9</b>
3.1. First Day Agenda.....	9
3.2. Second Day Agenda.....	10
<b>4. Perspectives from Government Officials.....</b>	<b>11</b>
4.1. DTRA, Director for ASCO.....	11
4.2. DDR&E, Director for Weapons Systems.....	11
4.3. NNSA, DOE.....	12
<b>5. Summary of the Survey Presentations.....</b>	<b>13</b>
5.1. Nuclear Isomers Panel.....	13
5.2. Low Energy Nuclear Reactions (LENR) Panel.....	16
5.3. Anti-Matter Annihilation Panel.....	20
<b>6. Other Topics.....</b>	<b>23</b>
6.1. Exotic Energy and Power Concepts.....	23
6.2. 4 <sup>th</sup> Generation Nuclear Weapons.....	23
6.3. Intelligence Perspective.....	24
<b>7. Feedback From Panel of Experts.....</b>	<b>25</b>
<b>8. Workshop Summary.....</b>	<b>26</b>
<b>9. Recommendations.....</b>	<b>28</b>
<b>Appendix A: Workshop Participants.....</b>	<b>29</b>
<b>Appendix B: Hotwash Briefing.....</b>	<b>31</b>
<b>Appendix C: Summary Workshop Briefing.....</b>	<b>35</b>
<b>Appendix D: Statutory and Treaty References to Nuclear Weapons Development.....</b>	<b>43</b>

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## 1.0 Executive Summary

The potential energy that can be tapped from the nucleus ( $\geq 10^6$  eV/atom) is vastly greater than the energy available from the electronic states of an atom ( $\leq 1$  eV/atom). The conversion of mass into energy, via fission and fusion reactions, is the basis for the only existing "high-energy" weapons, but further refinements in the design of these weapons, to make them more relevant to the post-Cold War security environment, are certainly possible. Another possible way to extract energy from the nucleus is to exploit the energy stored in metastable isomeric states. Also, despite the negative publicity about "Cold Fusion," the nuclear community continues to watch research in the area of low energy nuclear reactions with guarded optimism for possible future commercial and military applications. Anti-matter annihilation reactions involve the complete conversion of mass to energy with energy densities three orders of magnitude higher than nuclear fission and fusion. The prospect of compactly storing positrons in the form of charge-neutral positronium holds promise for viable military applications of anti-matter.

The Defense Threat Reduction Agency (DTRA) is chartered to monitor new potentially militarily useful sources of energy and to maintain cognizance of others' work in these fields as a hedge against technology surprise.

DTRA tasked SAIC under Contract DTRA01-03-D-0017, Technical Instruction 18-06-11, to conduct a Workshop on a wide range of energy-related technologies that are not chemical in nature, but have credible scientific basis and preliminary experimental results.

The format for the Workshop included a Panel of invited Subject Matter Experts (collectively referred to as the Expert Panel) well versed in the candidate technologies with a broad experience base in past DoD/DTRA advanced technology programs. This Panel was charged with providing individual critiques regarding the status and potential of four primary high energy technology research areas. The Expert Panel consisted of the Honorable Harold Smith, former DoD/ATSD(NCB) and currently a Distinguished Visiting Scholar and Professor at UC, Berkeley; Dr. Jack Davis, ST Executive, Plasma Physics Division, NRL; Dr. Gerald Yonas, Director, Advanced Concepts Office, Sandia National Laboratory; and Dr. Fred Wikner, former OSD Director of Net Assessment and presently consultant to Applied Research Associates Inc.

To avoid a myriad of disparate perspectives on each of the topic areas, a key expert was assigned to coordinate the presentations in each topic area and to serve as the Chairman of the topic area Panel. The four topic areas and the respective Panel Chairs were:

**Low Energy Nuclear Reactions (LENR),** Dr. David Nagel, GWU

**Anti-Matter Annihilation,** (b)(6)

**Nuclear Isomers,** Dr. Jim Silk, IDA



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**Advanced Nuclear Fission and Fusion Concepts, Dr. Don Linger, DTRA**

An additional topic that was discussed but which did not have a Panel was,  
**Exotic/Extreme Physics.**

Each of the panels presented impressive results showing good progress in experimental design and execution and in first-principal demonstration of energy extraction, containment and control. Unfortunately, none of the energy sources studied are yet sufficiently advanced to be considered for development in the next five to seven years.

The Expert Panel noted the embryonic stage of development of most of the high energy technologies, and commented that DTRA, as a combat support organization, should stay abreast of the work but not necessarily serve as the primary sponsor for these technology areas.

The recommended course at this stage of development is for DTRA to provide some sponsorship, but more importantly, provide leadership in the form of working toward an interagency working agreement to assure its interests are protected and to speed the needed research by preventing overlap or duplication and identifying, with the other agencies, the most fruitful directions for new research.

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## 2.0 Introduction

The High Energy S&T Workshop was a follow-on to the Novel Energetics Workshop but with the focus on energetic materials and phenomena whose energy is derived from the nucleus or subatomic processes. The Workshop objectives were to explore the following five potential areas of high-energy research:

- **Nuclear isomers**
- **Low energy nuclear reactions (LENR)**
- **Anti-matter annihilation**
- **Advanced nuclear fission and fusion concepts**
- **Exotic/extreme physics**

Only the first three topics are discussed in detail this report, because they were the primary focus of the Workshop and could be treated at the unclassified level.

The Workshop was structured to include a Panel of Experts, well versed in the topical areas and familiar with DTRA's missions and research portfolio. The Panel of Experts consisted of:

**The Honorable Harold Smith**, former DoD/ATSD(NCB) and currently a Distinguished Visiting Scholar and Professor at UC, Berkeley

**Dr. Jack Davis**, ST Executive, Plasma Physics Division, NRL

**Dr. Gerald Yonas**, Director, Advanced Concepts Office, Sandia National Laboratory

**Dr. Fred Wikner**, former OSD Director of Net Assessment and presently consultant to Applied Research Associates Inc.

The panel of Experts was instructed to screen and critique candidate high-energy S&T topics and provide recommendations regarding their maturity and relevance for DTRA.

The three topics of Nuclear Isomers, LENR, and Anti-Matter Annihilation were presented as Panel Discussions, starting with an overview by the Panel Chairman; followed by a detailed presentation by each panelist, and finally a discussion period with the Panel of Experts and the Workshop participants.

The following questions were posed for the discussion period:

- Should the high energy S&T topics be included as part of a balanced investment portfolio in "Disruptive Energetics?"
  - Do we understand the underlying physics sufficiently well to proceed with confidence?
  - Do the potential pay-offs outweigh the risks?

- What should be the focus of the investment?
  - Well-defined, refereed, repeatable experiments?
  - Proof-of-concept tests?
  - Theoretical investigations?
  - Other?
- What are the potential applications?
  - Could these topics underwrite game-changing improvements in warfighting?
- What are the potential risks?
  - How many orders of magnitude of the specific energy density is likely to be lost to system-level packaging?
  - What criticisms should we anticipate from scientists, from the DoD bureaucracy, from Congress, ...?
  - Will these topics bump up against nuclear arms control agreements?

### 3.0 Workshop Overview

The High Energy S&T workshop was held in the DTRA Headquarters Auditorium at Ft. Belvoir, VA. The first day was dedicated to unclassified work while the second day was maintained at the Secret CNWDI level to facilitate in-depth discussions on several of the topics.

#### 3.1 First-Day Agenda

The agenda for the first day is shown in Figure 1. Each of the three Panel Chairs provided a summation of their topical area followed by detailed briefings by each of the Panel members. Dr. Bob Park was invited to speak at lunchtime, where he provided a perspective for evaluating new and evolving scientific and technical concepts against risky assumptions and faulty premises.

Agenda = 12 Dec 2006 (Unclassified Session)		
0830	Admin & Introductory Remarks	ASCO Staff, SAIC Staff
0900	OSD Perspective	Spiro Lekoudis, DDR&E
0930	NNSA Perspective	Dave Grandall, NNSA
1000	Break	
1015	Panel 1 = Nuclear Isomers	Jim Silk, IDA (Panel Chair)
	James Carroll, Youngstown State	
	(b)(6)	
	Ehsan Khan, SIER Program Rep	
1215	Lunch	
	<i>Luncheon Talk: "A Skeptic's Viewpoint" Bob Park, UMD</i>	
1300	Panel 2 = LENR	David Nagel, GWU (Panel Chair)
	Mitchell Swartz, JET Energy Inc.	
	Michael Melich, NPGS	
	Lewis Larsen, Lattice Energy LLC	NET: Allan Widom spoke as well
1500	Break	
1515	Panel 3 = Anti-matter	Ken Edwards, AFRL/MN (Panel Chair)
	Allen Mills, University of California, Riverside	
	Gerry Smith, Positronics Research LLC	
	Paul Csonka, University of Oregon	
1715	Adjourn	

Figure 1: The Energy Workshop Agenda = Day 1

### 3.2 Second-Day Agenda

The second day included a perspective from the intelligence community, a review of an OSD-sponsored Net Assessment of Novel Energetics, and a discussion on the potential for 4<sup>th</sup> Generation Nuclear Weapons. Most of the presentations were classified. At the end of the day, the Expert Panel reported their individual observations and a "Hotwash" briefing was presented to the senior leadership of the DTRA. Figure 2 shows the agenda of the second day.

<b>Agenda = 13 Dec 2006</b> <b>(Session Classified)</b>		
0830	Intelligence Perspective	(b)(6)
0930	OSD Net Assessment (Blue Team)	
1015	Break	
1030	Exotic Energy and Power Concepts	Charles Rhodes, U of IL
1130	Lunch	
1230	Panel 4 = 4 <sup>th</sup> Generation Nuclear Weapons	Don Linger, DTRA Ed Turano, LLNL
1400	Break/Expert Panel Deliberations	
1430	Expert Panel Findings and Recommendations	
1530	Adjourn	
1600	Hotwash (Government Only)	
1700	Finis	

**Figure 2: The Energy Workshop Agenda = Day 2**

## 4.0 Perspectives from Government Officials

**4.1 Dr. Mike Wheeler, DTRA Director of ASCO** welcomed all to the Workshop and provided additional context for the meeting. He spoke about the 2003 Summer Defense Science Summer Study on Future Strategic Systems, chaired by Johnny Foster. Three main themes emerged:

- a. Whether we maintain legacy nuclear weapons and/or develop new weapons (emerging technology). This debate regarding the composition of the stockpile is still ongoing.
- b. How to prevent strategic surprise from taking place by challenging the strategic community and policy community to look ahead at emerging technologies that could have military implications.
- c. What options can be given to the President to hold targets at risk without breaking the nuclear threshold – this effectively being a "holy grail" for the policy community.

He proceeded to explain how High Energy technologies fit within the DTRA research portfolio. DTRA has become the one place to concentrate all the nuclear weapons activities within the DoD. The Director of DTRA is also now dual-hatted as the Director of STRATCOM's Center for Combating WMD worldwide. DTRA has also just adopted a Campaign Structure whose topics are cross-cutting. He expressed his belief that High Energy technologies will contribute to several of these Campaigns.

**4.2 Dr. Spiro Lekoudis, DDR&E, Director for Weapons Systems,** referenced a comprehensive review of all DoD energetics research that was conducted the previous summer in response to Defense Planning Guidance and to support the POM and the Budget Estimate Submission (BES) process. He noted the gap between chemical energetics and nuclear energetics and how 50 years of research has only extended the chemical energy density by perhaps a factor of two. He acknowledged that some of the topics under consideration in this Workshop have the potential of narrowing that gap but he was circumspect about the prospect of additional funding to do so. While he recognized that the energetics community may be in distress, he placed some of the blame on the acquisition pipeline and the lack of awareness of the art of the possible. He lauded DTRA's initiative in conducting this Workshop and commented that he depends on such forums to gather the necessary information to make informed decisions. He cited the need for lighter, smaller, and more effective weapons as the primary motivator for advanced energetics, particularly in the context of difficult-to-defeat targets such as hardened bunkers and underground tunnels. He also expressed some frustration that DARPA R&D is not suited for long-term research even if the projects are "DARPA-hard." DARPA's mandate for prompt (3-year) transition to the warfighter limits their involvement in such pursuits as novel energetics.

**4.3 Dr. Chris Deeney, National Nuclear Security Administration (NNSA)** spoke for **Dr. Crandall** who was unavailable for the morning session. He expressed strong support for DTRA's program in trying to better understand nuclear weapon output and felt that more effort is needed here. As far as NNSA programs are concerned, the focus has been on the Reliable Replacement Warhead (RRW) and Complex 2030, which will provide the infrastructure to support our future nuclear stockpile. However, in today's environment anything nuclear is a tough sell and even the RRW is getting push-back from Congress.

He discussed the NNSA concerns about technology surprise in developing scientific fields related to high energy, high energy density, and high energy release rates. In this regard, he expressed concern about the decline in nuclear curricula at our universities and the dearth of U.S. students interested in pursuing the nuclear career field. This is not the case in Japan, Europe, and other parts of the world, where the leadership values nuclear power and recognizes the dual-use nature of the technology as a pathway to proliferation. He briefly described the NNSA Academic Alliance program, which seeks to reverse some of these unfavorable trends and demographics and train the next generation of scientists and managers for the nuclear enterprise.

In response to a question regarding NNSA-sponsored laser research, he commented that lasers and particle accelerators are fertile fields of research to meet future requirements. For example, he cited an important need for proton radiography.

In regard to other potential nuclear sources of energy, he felt that existing treaties and arms control protocols would get in the way, unless it is clear that there is zero yield from either fission or fusion processes. He noted that nuclear spin isomers might be exempt from current legal strictures, but the loophole will not likely last if such concepts are actively pursued.

## 5.0 Summary of Survey Presentations

### 5.1 Nuclear Isomers Panel

**Dr. Jim Silk**, Institute for Defense Analysis (IDA), chaired the panel on Nuclear Isomers. An experimental nuclear physicist by training, he has been with IDA for 17 years, serving as the Deputy Director of the Science and Technology Division for the last four. He led the OSD-sponsored review of Nuclear Isomer Triggering in 2002, and served as a member of the Low Energy Nuclear Reaction Verification Red-Team.

Dr. Silk acknowledged the attractiveness of nuclear isomers given that their specific energy density is within a factor of a 100 of that of nuclear weapons. However, in his opinion, nuclear isomer research is still immature, energy break-even is improbable, and fuel production is likely to be harder than was the case for nuclear weapons. He discussed the experimental results and the reasons for difficulties in demonstrating energy gain and appropriate levels for triggering radiation release. These are related to the theoretical intractability of nuclear transitions and the crossover between natural low energy transitions and high energy depletion state thresholds. He summarized the current state of controversy regarding the  $\text{Hf}^{178\text{m}2}$  isomer by stating that he has not seen any evidence of observable triggering. His recommended path forward is shown in the panel below:

#### ***Path Forward***

- How to resolve the controversy?
  - = Design a new (null) experiment?
  - = Red team the data analyses? White team?
  - = Let it play out?
- Beyond this, where should the research program go?
  - = Nuclear structure studies - K-mixing mechanisms
  - = Search for natural  $2\text{-}\gamma$  decays
  - = Other isomers
  - = Other triggering mechanisms
  - = Diversify



Dr. Carroll, Youngstown State University, reviewed the basics of nuclear isomers and their induced depletion (he prefers this term in lieu of "triggering"). He presented a table of 32 storage isotopes having lifetimes measured in seconds to years, highlighting those that store the most energy for the longest time as potentially useful for DTRA applications. Dr. Carroll summarized the current work being performed as following one of two approaches: 1) performing nuclear spectroscopy to characterize the energy levels and transitions or 2) direct measurement of depletion of metastable states with gamma ray, neutron or heavy ion irradiation followed by detection of decay rates of discrete energies. He reviewed nuclear spectroscopy and depletion data for several interesting isomers. The panel below shows some of the more promising candidates having depletion paths or induced decay modes:

### ***REPORTED DEPLETION***

- $^{178m2}\text{Hf}$  = depletion paths identified ( $> 300 \text{ keV}$ )
- $^{242m}\text{Am}$  = depletion paths available
- $^{108m}\text{Ag}$  = depletion path in literature (partial data)

### ***SPECTROSCOPY***

- $^{180m}\text{Ta}$  = photons, confirmed and connected to nuclear spectroscopy
- $^{178m2}\text{Hf}$  = photons near  $10 \text{ keV}$  = not confirmed or substantiated by spectroscopy
- $^{177m}\text{Lu}$  = neutrons, not confirmed
- $^{68m}\text{Cu}$  = photons (Coulomb excitation), not confirmed

- **THREE POSSIBLE CASES OF MEASURED DEPLETION**
- **THREE ADDITIONAL ISOMERS WITH DEPLETION PATHS**

The panel that follows is Dr. Carroll's summary of his views regarding the issues slowing progress:

## ***IMPEDIMENTS TO PROGRESS***

- **TIME** = experiments are typically difficult to perform and analyze
- **MATERIAL** = isomeric material needed in sufficient quantity for tests = purity typically insufficient for spectroscopic measurements as targets (isomer beams may solve this problem)
- **MANPOWER** = support needed to expand research dedicated to depletion tests and related spectroscopy
- **PERCEPTION** = latest depletion-related research considered solid, but nuclear physics community wary of extraordinary claims (as it should be).

**Dr. Ehsan Khan**, Department of Energy, Science Division, and former Program Manager for DARPA's Stimulated Isomer Energy Release (SIER) Program presented his perspective on the attractiveness of Nuclear Isomer Release Energy. Based on his experience with the Hafnium Isomer Production Panel (HIPP) he believes there are various feasible methods to increase production rates. He also believes that one of the drawbacks of past triggering experiments has been that the detection of low levels of triggered radiation is difficult in the presence of triggering radiation, other reactions, as well as electro-magnetic interference. Detecting the triggered radiation in such a complex background will need very careful experimental design.

**Dr. Schumer**, NRL, presented his perspective on why nuclear isomers/isotopes are intriguing energy-storage media. The question, which he believes remains unanswered, is whether nuclear isomers/isotopes can serve as a source of energy-on-demand? Dr. Schumer reviewed recent and proposed work at NRL, ARL and NSWC. He emphasized the need for a broader scope of research, including triggering using particles as well as gamma rays and showed some promising results under high current/fluence, short duration pulsed particle beams, allowing measurement of product decay without the presence of the primary beam contributing noise.

His guidance on future isomer/isotope research is shown in the panel below:

**Nuclear isomers/isotopes are intriguing energy-storage media, but the question remains: can they be energy-release media?**

- Basic research is required before applications can be envisioned
- Efforts should be multi-faceted and multi-institutional
- Focus should expand beyond "Unobtainium" (i.e.  $^{178m2}\text{Hf}$ )
  - = including pure spin-isomers (not K-hindered)
  - = including electron-capture and internal conversion isotopes
- Experimental evidence should be:
  - = tempered with theoretical expectations
  - = "open" vetting by experts, including both peers and un-invested community ("open" is TBD by concerned agency)
- After confirmation, system study is still required to deem ready for real life (is efficiency good enough?)
- All of this is required before beginning Manhattan-style effort to produce material

**5.2 Low Energy Nuclear Reaction (LENR) Panel**

**Dr. David Nagel**, George Washington University, chaired the Low Energy Nuclear Reaction (LENR) Panel. He is a Research Professor in the School of Engineering and Applied Science of George Washington University. Dr. Nagel is a recognized authority on low energy nuclear reactions in condensed matter. He commented on the present state of LENR research, noting some of the more important problems impacting LENR research today:

## **PROBLEMS**

- **Potential Importance for Energy, Materials and Weapons**
- **Polarization of Scientists**
- **Diverse Mistakes**
- **Technical Complexity**
- **Flows of Money and Information Disrupted Early & Remain Poor**

On the other hand, **Dr. Nagel** pointed to many recent positive developments that indicate substantial progress in understanding and demonstrating LENR. He also mentioned the need for a theoretical basis to underpin experimental work.

## **PROGRESS**

- **Continuous Activity & International Conferences**
- **Better Instrumentation, Calibration and Controls**
- **Some Systematics Found & Verified for Heat Generation Experiments**
- **Nuclear Ash Measured & Correlated with Heat Production**
- **More Attention to Materials**
- **New Experiments Performed**
- **Some Inter-lab Reproducibility**

**Dr. Mitchell Swartz, JET Energy, INC** presented a brief summary of the results of excess heat experiments in electric-field loaded deuterated metals:

## **EXCESS HEAT IN ELECTRIC-FIELD LOADED DEUTERATED METALS**

**Research and Development**

### **BRIEF SUMMARY OF RESULTS:**

**SIGNIFICANT EXCESS HEAT OBSERVED IN PALLADIUM HEAVY  
WATER (PdD) SYSTEM, PALLADIUM HEAVY WATER (PdD)  
CODEPOSITIONAL SYSTEM, SOME NICKEL LIGHT and  
HEAVY/LIGHT WATER SYSTEMS**

**EXCESS HEAT NOT OBSERVED IN IRON, ALUMINUM, OR  
DAMAGED PALLADIUM NICKEL SYSTEMS**

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JET Energy, Inc.

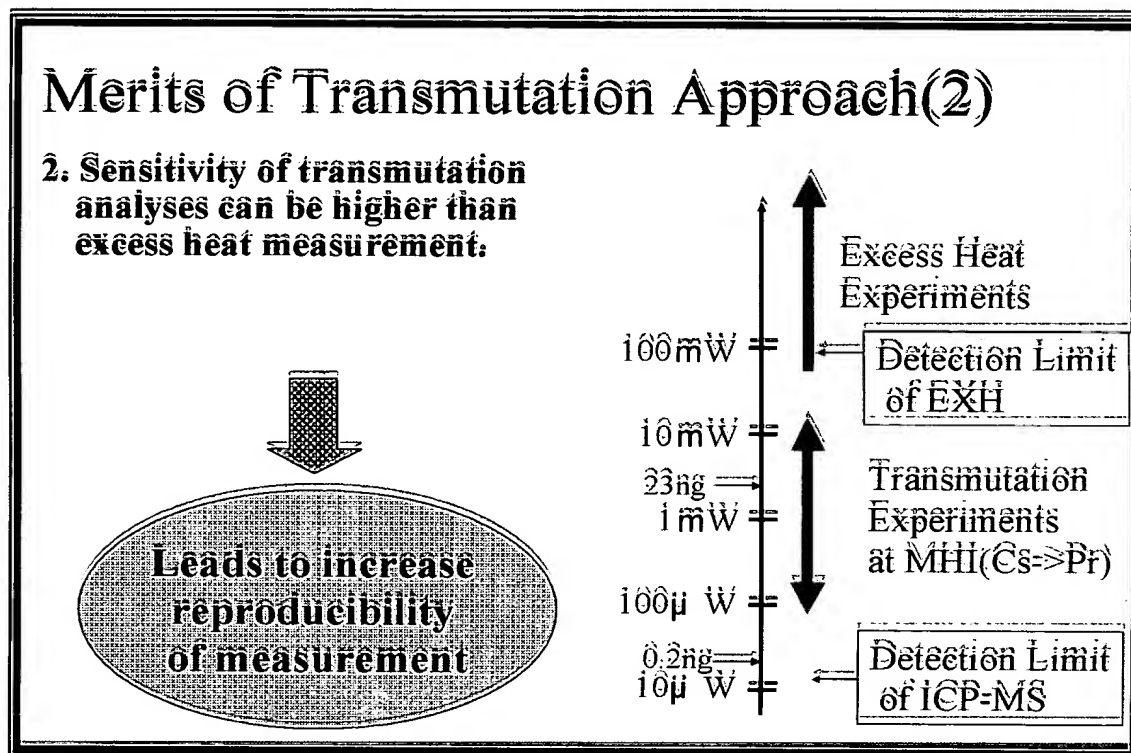


DTA ASCO Workshop  
on High Energy Science and Technology Dec.  
12, 2006

He explained his methods for controlling measurement error and system noise by using dual calorimeter measurements that allowed precise differential measurement and integration of power. He was thus able to compare measurements of several different instruments to allow judgment of consistency in his reported results.

The diffusion and electrophoresis equations show the advantages of low conductivity electrolytes and relatively high voltages for loading D into the electrodes with co-deposition of electrode material. Dr. Swartz obtained energy and power gains over the D charging (loading) input power and discussed the importance of determining optimized operating points. Impressively, he showed a video demonstrating enough power to spin the propeller of a model airplane.

Professor Michael Melich, W.E. Meyer Institute for Systems Engineering, Naval Postgraduate School, talked about transmutation as the signal for detecting LENR using experiments conducted in a Deuterium cell with an electrolytic Pd diffusion barrier. Quantifying the transmutation products as an experimental approach potentially affords greater sensitivity and reproducibility than excess heat, since the new elements are not present initially and can be detectable in very small concentrations:



Recent trials confirmed that following standard electrolysis experiments, the diffusion barrier contained elements not present before the runs. In principle, the results of a single run can then be analyzed by other labs to determine the degree of consistency in detection of small concentrations of transmuted elements.

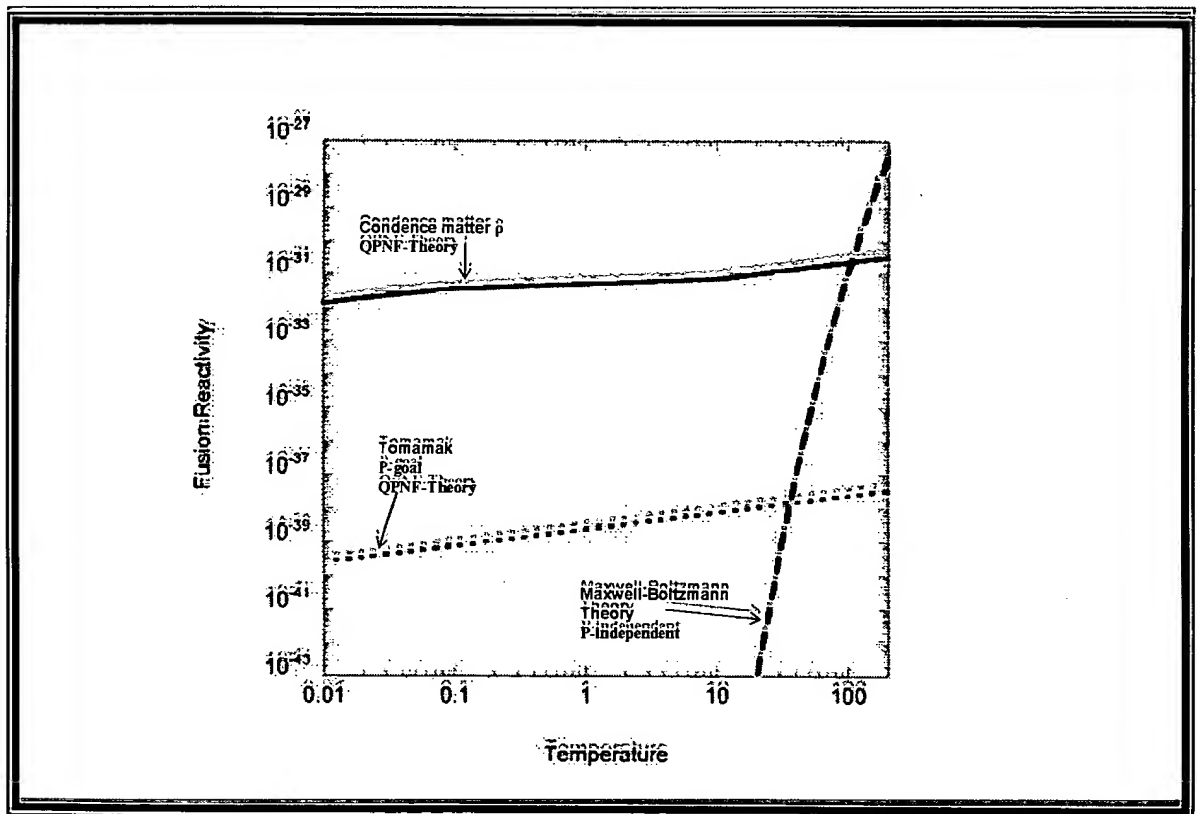
Lewis G. Larsen, President and CEO, Founder and Prof. Allan Widom Consultant and Member of Lattice Energy LLC and Northeastern University, Dept. of Physics presented proprietary material on the Widom-Larsen theory for metal hydride surface catalysis of LENR. A convincing thesis was advanced to describe many of the known features of LENR without invoking

any new physics. The theory is premised on the weak force (beta decay) of the Standard Model.

NET: Kim did not present on the 12th or 13th, though he was in the audience. He provided slides to DTRA after the meeting.

**Yeong E. Kim, Purdue Nuclear and Many-Body Theory Group, Department of Physics, Purdue University** described a theory based on Quantum effect broadening of the distribution (via the Gamow factor). For  $n(E)$  that is Maxwell-Boltzmann (MB), Fermi-Dirac (FD), or Bose-Einstein (BE) distribution, modified by the quantum broadening of the momentum-energy dispersion relation,  $\delta\gamma(E - \epsilon p)$ , due to particle interactions.

The Quantum Nuclear Plasma Fusion theory provides a mechanism for enhanced net reaction rates at lower temperatures as illustrated for Deuterium-Deuterium:



### 5.3 Anti-Matter Annihilation Panel

**Mr. Ken Edwards, AFRL/MN**, chaired the Anti-Matter Panel. He is Director of the Revolutionary Technologies Integrated Product Team, chartered to plan and develop revolutionary paradigm-shifting munitions for the Air Force of 2025. He is currently focused on Positron Energy Conversion for explosive and propulsive applications and has overseen work in this area for several years. This has been a joint program conducted in partnership with DARPA.

Mr. Edwards listed the primary advantage of stored positrons to be their very high specific energy densities without creating any radioactive nuclear debris or long-term radiation following an annihilation reaction. Regarding storage mechanisms, he showed some schemes for efficiently moderating and storing positrons in the form of positronium (Ps) (a pseudo-atom consisting of a positron and an electron) using Penning traps. He noted that positronium can be stabilized using crossed magnetic and electric fields. Quantum chemistry calculations suggest potential lifetimes of up to a year or longer.

**Dr. Gerry Smith, Professor Emeritus (Physics), Penn State, and Positronics Research, LLC** reported on the "Physics and Experiments with Long Life Positronium" and described the theoretical basis for extended half-life of Ps in the crossed fields of a Penning trap. It was postulated that radiation-damaged Silica Aerogel (SA) might be paramagnetic and with controlled pore size, crossed fields (based on remnant magnetic fields and an imposed (modest) electric field) would allow storage of positronium for significant times at useful densities:

Dr. Smith summarized the work he felt would need to be accomplished to demonstrate this concept for anti-matter storage:

### Program Goals & Challenges (Near -Term)

Demonstrate improvements for higher density and longer -term Ps storage

- Intense, larger volume (10x)  $e^+$  irradiation of SA ( $>20$  MGy)
- Test ultra light SA ( $> 100$  nm cavity) and magnetized SA
- $e^+$  beam injection into Penning trap (20 mCi source)
- $e^+$  accumulation, cooling and lifetime ( $10^{-6}$ , 3 meV,  $> 20$  sec)
- $e^+$  extraction into silica aerogel (5  $\mu$ sec)
- OWPs number enhancement (10 SA vol. x 30 field/temp = 300x @ 400G, 0.5K)
- OWPs density enhancements (30 field/temp/10 SA vol. = 3x @ 400G, 0.5 K)
- OWPs lifetime enhancement (TE; 100 nm, 1.2 ms = 100x; 1000 nm, 0.36 sec = 36,500x)



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**Dr. Allen P. Mills, Jr., Physics Dept., University of California, Riverside, CA** proposed the need for apparatus to provide larger numbers of Ps atoms in order to study aspects of stimulated annihilation and their Compton wavelength. Dr. Mills described his program for a series of increasingly intense positron sources and showed calculation of their efficiency in producing Ps. A  $^{12}\text{C}(d,n)^{13}\text{N}$  reaction provides positrons when the nitrogen decays, which are then slowed and cooled in a Penning trap. His program may lead to development a 50 W source of positrons. The sources currently under way are in the milliwatt range.

Dr. Mills scientific objectives are to measure  $g$  for Ps, (needs  $10^8$  Ps); to observe stimulated annihilation, (needs  $10^{11}$  Ps); to make an annihilation gamma ray laser and measure the Compton wavelength, and to ignite fusion (perhaps  $10^{19}$  Ps). Larger sources and more refined positron moderating and cooling techniques will be required for Dr. Mills' more advanced planned sources.

### Stages to 50 W antimatter source

Year	Model	d <sup>+</sup> Energy	Current	slow e <sup>+</sup> /s	
2008	HFPS-1	1.5 MeV	1 mA	no mod.	
2008	HFPS-2	1.5 MeV	1 mA	$10^9$	
2009	HFPS-3	5 MeV	1 mA	$10^{10}$	1.6 mW
2010	HFPS-4	5 MeV	10 mA	$10^{11}$	16 mW
2011	HFPS-5	30 MeV	10 mA	$3 \times 10^{12}$	0.5 W
201X	HFPS-X	30 MeV	1 A	$3 \times 10^{14}$	50W

HFPS-3 is about to enter Phase II.

HFPS-4 and 5 are suitable for a large lab.

HFPS-X might be possible.

**Dr. Paul L. Csonka, University of Oregon,** spoke on the topic of "INTENSE POSITRON SOURCE with ENERGETIC ELECTRONS TRAVERSING UNDULATOR". He proposes positron generation using gamma rays from undulators mounted on major high energy storage rings. The main source of positrons (fast particles) seems to be pair production. He showed calculations of positron currents of between  $10^{14}$  and  $10^{17}$  per second and suggested the resulting

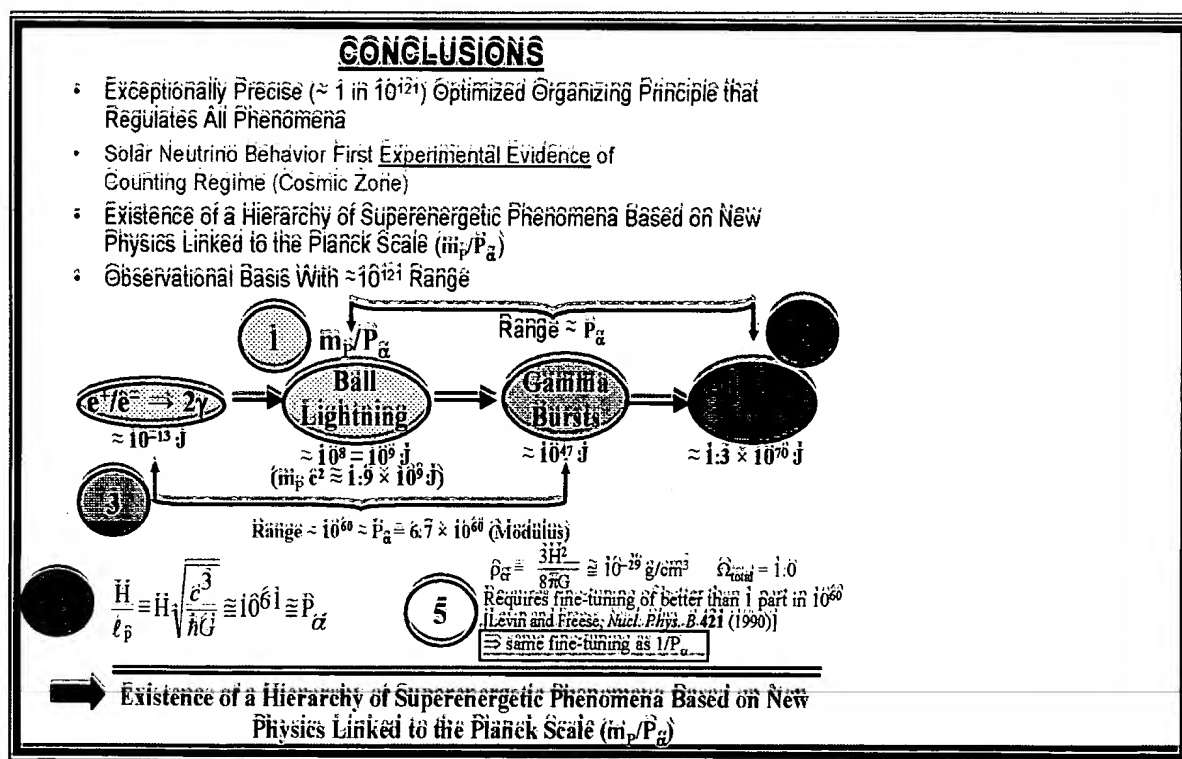
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fast particles could be moderated with an efficiency of 0.001 to 0.1 by one or another of proposed schemes. Accelerators existing and planned for other purposes could be adapted relatively easily for high flux positron production.

## 6.0 Other Topics

### 6.1 Exotic Energy and Power Concepts

Dr. Charles Rhodes, University of Illinois, illustrated relationships between levels of energy, power density of known physical phenomena that covers a scale of  $1:10^{121}$  in known instances. While some parts of this range have been exploited, Dr. Rhodes points out that many other parts of this vast range are available for study, and potentially scalable to energetic applications of interest:



### 6.2 4<sup>th</sup> Generation Nuclear Weapons

Dr. Don Linger, DTRA, postulated a new generation (post-Cold War) that would have little-to-no fission yield and therefore would be both radiologically clean and (perhaps) treaty compliant. Such low yields could be used against tactical targets and hard targets as well as for high altitude weapon effects. The US must be cognizant of such capabilities and the implications of such weapons potentially in the hands of our adversaries, both near-peer and developing nations.

### 6.3 Intelligence Perspective

(b)(6) Intelligence Community, gave remarks on advanced energy sources from the intelligence perspective. He is aware of concerns for the US maintaining an ability to steer high quality research to topics and objectives critical for national security.

In a connected concern, he also spoke of the inability to pursue answers to important questions because of lack of technical understanding, the inability to properly prioritize issues and finally, a lack of qualified workers in these fields. He supported the advanced work being discussed in this workshop as both critical data to be acquired and as important training for the rising generation of scientists and engineers.

## 7.0 Feedback from Panel of Experts

The Honorable Dr. H Smith, Dr. Jack Davis, Dr. Fred Wikner, and Dr. Gerald Yonas served as subject matter experts and provided their overall review of the Workshop. Their findings and recommendations are summarized in the table below:

	<b>Advisory Board Findings</b>	<b>Advisory Board Recommendations</b>
<b>Isomers</b>	<ul style="list-style-type: none"> <li>Nuclear structure is complex and poorly understood</li> <li>Experiments are ad hoc- not systematic: some interesting data but no triggering observed</li> </ul>	<ul style="list-style-type: none"> <li>Conduct large scale computer simulations like ASCI (not DTRA; NSF or DOE)</li> <li>Experiments-long term; guided by theory; funded by NSF and DOE</li> </ul>
<b>LENR</b>	<ul style="list-style-type: none"> <li>There is good evidence of excess heat and transmutation</li> <li>New theory by Widom shows promise; collective surface effects; not fusion</li> <li>Low energy implantation of ions</li> </ul>	<ul style="list-style-type: none"> <li>Careful experiments confirm and expand data base</li> <li>Expand theory field with more participants</li> <li>Other experiments included</li> </ul>
<b>Anti-Matter</b>	<ul style="list-style-type: none"> <li>Systematic approach required: how to manage it</li> <li>Experiments will require substantial increments</li> </ul>	<ul style="list-style-type: none"> <li>Not suitable for DTRA; a combat support agency.</li> </ul>
<b>Nuclear Weapons</b>	<ul style="list-style-type: none"> <li>DoD needs low residual radiation weapon; DOE knows how to RDT and produce them</li> </ul>	<ul style="list-style-type: none"> <li>US DOE should proceed; DoD should provide requirements</li> </ul>
<b>General Observations</b>	<ul style="list-style-type: none"> <li>Agency staffs and services are increasingly risk adverse</li> </ul>	<ul style="list-style-type: none"> <li>Defense research establishment must think creatively about new concepts</li> </ul>

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## 8.0 Workshop Summary

The High Energy Workshop endeavored to assemble the recognized experts in each of the energy categories to survey the state-of-art. The presentations did elucidate the state of science but of course were limited in depth based on time available. At the end of the Workshop, an early summary or "Hot Wash" debrief was presented to the senior DTRA leadership on the salient points made in the two days presentation. It is included in Appendix B.

**Nuclear Isomers** research has not yet provided evidence of reliable and effective triggering mechanisms. Production seems feasible, though engineering development is needed to scale up to practical amounts of material. The complexity of isomeric excited states and their induced depletion paths leads us not to expect too much from better theory or intense calculational efforts.

Yet, one cannot help but be intrigued by potentially gaining access to such highly energetic states for military applications. At this stage, modest investments related to the study of isomers and the physics of de-excitation would appear to be prudent. Also, improvements in experimental methods and diagnostic tools may be warranted.

Clearly, isomer production is not now the greatest roadblock to a proof-of-principal demonstration and should not be pursued at this time. A more fundamental issue is demonstration of a robust triggering approach. Here more experimental work is useful if focused on development of techniques for analyzing gamma spectra and measurement of depletion rates. Equally important would be innovative approaches to nuclear structure and transition probabilities. Weapons applications based on isomeric payloads are premature and should not be pursued.

**Low Energy Nuclear Reactions** are showing some remarkable progress with respect to energy (excess heat) production and transmuted element detection, but experiments remain only thinly reproducible. LENR also suffers from a basic lack of understanding of the governing physics.

There is also a compelling need for a theory that can explain production rates and lead to specific electrode treatments and electrolyte compositions and predictions of reaction power, energy and products. The Widom theoretical construct appears promising, but lacks robust experimental verification and rigorous peer review.

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**NET: Widom-Larsen theory published in peer-reviewed Eur. Phys. J. C nine months before March 2001**

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The polarizing history of LENR is a detriment to expanding research efforts and it seems unlikely that deployable/useable devices could be expected within a five to ten year horizon. Some low-level funding by 6.1 agencies seems appropriate, both to exploit the possibility of a breakthrough and to monitor other (international) research in this field. Nonetheless, DTRA should not go it alone; rather, it should provide the leadership to build interagency research consortia with a focus on fostering improved research facilities and rigorous experimental protocols.

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**Anti-Matter** research has provided encouraging results to suggest that positrons, in the form of positronium, may be efficiently stored with reasonable lifetimes. Clearly, stable sources of Ps capable of generating intense gamma pulses could have numerous interesting military applications. Methods to package Ps with longer life times and useful densities will require considerable experimentation and development, as will achieving efficient and affordable positron production methods.

A modest 6.1 program would keep DTRA in play on any future decisions regarding the feasibility of weaponizing anti-matter.

**4<sup>th</sup> Generation Nuclear Weapons Concepts** appear to be attractive for a number of military objectives, especially in situations needing low yield and low residual radioactivity

(b)(3):10 USC 128

The military effectiveness of such weapons will need to be characterized in detail in concert with suitable concepts of operation. The policy implications, in terms of how such weapons may be used and whether they meet current legal strictures and arms control restrictions, must also be examined. In view of this concern, expressed by several members of the Expert Panel, a cursory review of the current legal definition of nuclear weapons was commissioned by DTRA and is provided in Appendix D.

Given the congressional restrictions on pursuing new nuclear weapons concepts, it is not clear what DTRA's role should be other than to stay abreast of new developments in this area, as a hedge against technology surprise and a new wave of proliferation. Also, a review of the potential implications to the U.S. national security posture, should such weapons be developed by others, would appear to be well advised.

A **Workshop Summary Report** briefing was compiled following the workshop and was presented to DTRA sponsors of the workshop. It is provided in Appendix C.

## 9.0 Recommendations

**Novel Energy Strategy:** The Expert Panel noted that there many potentially interested agencies and that DTRA, as a new 6.1 agency, will need to find its niche. It is recommended that DTRA form and/or participate in an Interagency Novel Energy Working Group. Partnering agencies would include DTRA, DOE/NSSA, the National Laboratories, DHS, DARPA, NSF, and the Service Labs. The charter would be to coordinate budgets for maximum return and chart a course that would accelerate development of advanced energy concepts.

**Isomer Energy Storage:** The extraordinary claims regarding the de-excitation of  $\text{Hf}^{178\text{m}2}$  appear to have been thoroughly discredited. Nonetheless, it may be warranted to fund some basic research to continue screening candidate isomers, to develop an improved understanding of the physics of isomer de-excitation, and to explore de-excitation methods other than x-ray stimulation. There are no likely near-term military applications of nuclear isomers.

**LENR:** LENR still suffers from negative publicity associated with Cold Fusion and is viewed as being conducted outside the domain of legitimate, mainstream science. Nonetheless, the persistent and increasingly repeatable demonstrations of excess heat and transmutation suggest that there is something here worth pursuing. DTRA should not do so alone, but rather foster consortia that would help bring discipline and rigorous experimental protocol to this field. Additionally, efforts to better understand the physics of LENR as well as the development of first-principle predictive models are encouraged.

**Anti-Matter:** The challenge of stable storage of positrons in the form of positronium may be surmountable but progress to date has been modest. Near-term applications of this technology appear to be ill-advised. Additionally, the large parasitic mass associated with the storage of positronium and the small amount that can be stored, even under the most optimistic projections, effectively limits the system-level energy density. Nonetheless, some basic 6.1 research should be invested in keeping the effort alive. Perhaps an alliance between DTRA and NSF would be useful in this regard.

**4<sup>th</sup> Generation Nuclear Weapons:** DTRA, in cooperation with NNSA and with the approval of OSD, should consider supporting a few pilot studies to explore the potential applications of 4<sup>th</sup> generation nuclear weapons to meet projected future national security needs, explore the potential impact of such weapons if they were to be used against U.S. forces or infrastructure, and examine their overall policy implications.

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## Appendix A Workshop Participants

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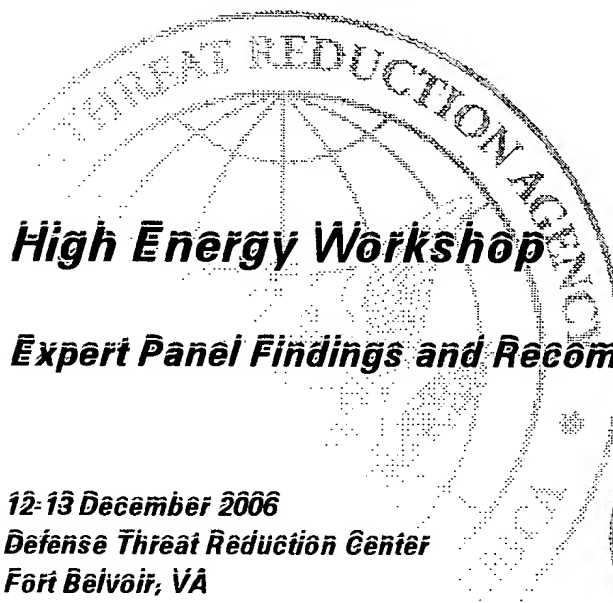


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**Appendix B**  
**Hot-Wash Briefing to DTRA**  
**December 13, 2007**

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***High Energy Workshop***

***Expert Panel Findings and Recommendations***

***12-13 December 2006***  
***Defense Threat Reduction Center***  
***Fort Belvoir, VA***



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## Findings & Recommendations Isomers

- Findings
  - Nuclear structure is complex and poorly understood
  - Experiments ad-hoc = not systematic
    - Some good data
    - Hafnium triggering inconclusive and not energetically break-even
- Recommendations
  - Theoretical structure and reaction studies are needed
  - Experiments = Long-term, guided by theory, red-teamed

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## Findings & Recommendations LENR

- Findings
  - Good evidence of excess heat and transmutation
  - Widom-Larsen theory shows promise: collective surface effects ... not fusion
  - Low energy implantation of ions
- Recommendations
  - Careful experiments to confirm data base
  - Expand theory field = need more players
  - Other experiments warranted

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## Findings & Recommendations Anti-matter

- Findings
  - System approach required: How big is it??
  - Experiments will require substantial investments
- Recommendations
  - Not suitable for DTRA, a combat support agency

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## Findings & Recommendations Nuclear Weapons

- Findings
  - DoD needs low residual radiation weapons
  - DOE knows how to
    - RDT&E and Production
- Recommendations
  - DOE should proceed
  - DoD should provide requirements

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## Findings & Recommendations

### General Observation

- Finding
  - Agency staffs and Services are increasingly risk adverse
- Recommendation
  - Defense research establishment must think creatively about new concepts

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## Appendix C

### Summary Report Of High Energy Workshop

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### High Energy Workshop

Sponsored by DTRA/ASCO

*12 - 13 December 2006*  
*Defense Threat Reduction Center*  
*Ft. Belvoir, VA*

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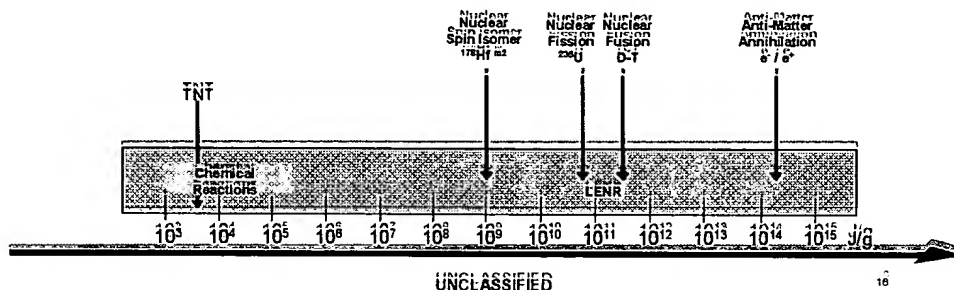
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## Workshop Objectives



- Survey and assess the S&T of highly energetic materials, whose energy is released via nuclear and subatomic processes ( $\geq 10^6$  eV/unit-event)
  - Nuclear Isomers
  - Low energy nuclear reactions (LENR)
  - Anti-matter Annihilation
  - Advanced nuclear fission and fusion
  - Exotic/Extreme Physics



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## Key Considerations



- Should these topics be included as part of a balanced investment portfolio in "Disruptive Energetics?"
  - Do we understand the underlying physics sufficiently well to proceed with confidence?
  - Do the potential pay-offs outweigh the risks?
- What should be the focus of the investment?
  - Well-defined, refereed, repeatable experiments?
  - Proof-of-concept tests?
  - Theoretical investigations?
  - Other?
- What are the potential applications?
  - Could these topics underwrite game-changing improvements in warfighting?
- What are the potential risks?
  - How many orders of magnitude of the specific energy density is likely to be lost to system-level packaging?
  - What criticisms should we anticipate from scientists, from the DoD bureaucracy, from Congress, ...?
  - Will these topics bump up against nuclear arms control agreements?

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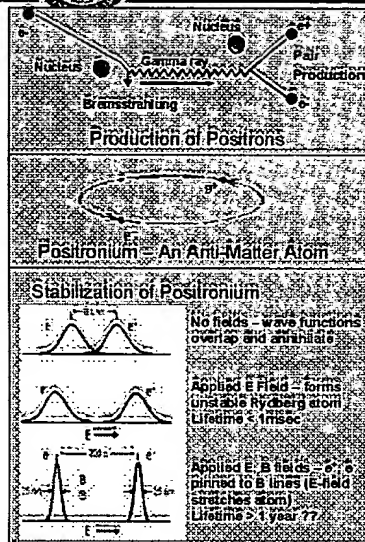
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## Anti-matter = The Basics



- Positrons annihilate with free electrons producing two soft (0.51 MeV) gamma rays (no radioactive products/residues)
  - : Energy density for PEC is  $1.8 \times 10^{14} \text{ J/g}$ ; compared to  $4.7 \times 10^9 \text{ J/g}$  for TNT and  $8.2 \times 10^{10} \text{ J/g}$  for  $^{235}\text{U}$  fission
  - :  $1 \mu\text{g}$  of positrons  $\approx 40 \text{ kg}$  of TNT
- Positrons produced via bremsstrahlung and pair production (requires linac or synchrotron)
- Positrons stored as neutral positronium
  - : No space charge forces to deal with
  - : Positronium stabilized by crossed E and B fields
  - : Quantum theory predicts stable Coulomb states of positronium with lifetimes of one year or longer
  - : Ps storage in Penning traps and silica aerogels
- Potential applications include blast-frag effects, EMP, gamma ray laser, bioagent defeat, propulsion etc.

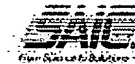
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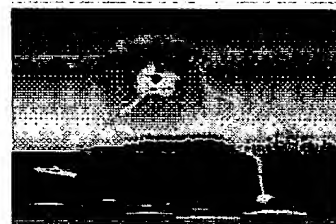
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## DARPA Proposed Applications for Positronium Payload\*



- A non-nuclear near-miss-to-kill interceptor for ballistic and cruise missile defense
  - : Direct hit not necessary
  - : Radiation kill of electronics and bioagents
  - : 0.3 ns risetime (b)(3): 10 USC prevents circumvention
  - : One  $\mu\text{g}$  burst can be lethal to 300m against unshielded electronics (upset & latchup); other lethality mechanisms operate at shorter ranges
  - : Only millisecond collateral RF interference effects
- A killer of bioagents in small bunkers
  - : Promptly kills bioagents prior to dispersal
  - :  $1 \mu\text{g}$  burst has a lethal radius of 2 meters against anthrax, the hardest case (radius for rendering sterile is greater)



\* Briefing by Martin Stickley, 5 June 2006

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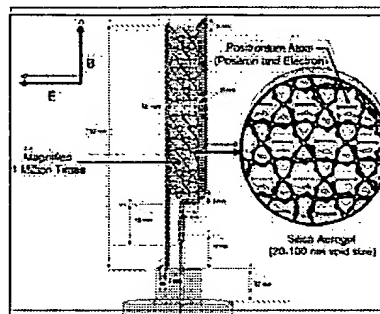
## Technical Challenges



The DARPA Ps Weapon Prototype consists of  $10^{21}$  positrons stored (as Positronium), at a density of 1  $\mu\text{g/liter}$ , with an energy equivalent of 180 MJ (40 kg TNT, 25x volumetric)

### Challenges

- Positronium production
  - Plant capital and operating costs (\$77M - \$200M per year)
  - Output of  $10^{22}$  to  $10^{24}$  Ps per year
- Long-term Ps storage (30 yrs) at militarily useful densities (180 MJ/l)
  - Create stable states of Ps that prevent self-annihilation
  - Penning trap for accumulation and cooling
  - Silica aerogel storage for weapons application
- Cost per weapon
  - \$200K - \$1.5M



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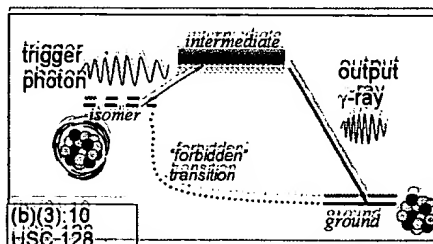
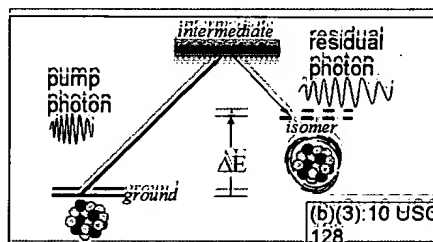
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## Nuclear Isomers = The Basics



- Nuclear isomers are metastable excited nuclear states with energy densities approaching nuclear fission (up to  $10^9$  J/g for isomers vice  $10^{11}$  J/g for nuclear fission)
- Nuclear isomers are long lived with mean lifetimes ranging from a few  $\mu\text{sec}$  to 1000s of years
- Fuel production is harder than for SNM
- Isomers can be de-excited to release energy by x-rays, neutrons, ions, ...
  - Demonstrated in  $^{180}\text{Ta}$  and  $^{187}\text{Au}$
  - Triggering physics not well understood
  - Energy break-even is improbable
- Potential applications
  - Weapons and portable energy sources if triggering energy is low



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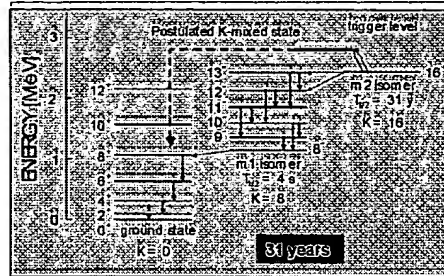
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## The Hafnium Controversy



- $^{187}\text{Hf}^{m2}$  is attractive isomer
  - : 2.4 MeV above ground state
  - : Half-life of 31 years
- in 1999 collaboration led by Carl Collins (UT, Dallas) reports in Phys Rev Letters evidence that 10-keV x-ray photons can de-excite  $^{187}\text{Hf}^{m2}$ , triggering a prompt cascade of 2.45-MeV gamma-rays
  - : Claimed existence of k-mixed state some 20-60 keV above the  $m2$  state
- All attempts to reproduce Collin's results failed
- Strong theoretical arguments against triggering of  $^{187}\text{Hf}^{m2}$ 
  - : Isomer is in high spin state ( $J \approx 16$ ,  $K \approx 16$ ) = selection rules for E-M decay severely inhibit transitions with large changes in K
  - : Theoretical nuclear x-ray absorption cross sections too low by  $\times 10^4$
- Even if triggering were possible, difficult to envisage chain reaction for explosive applications



### Where to next?

- : Achieve closure for  $^{128}\text{Hf}^{m2}$  ??
- : Nuclear structure studies (K-mixing)
- : Other isomers
- : Other triggering mechanisms

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## Potential Isomers for Consideration



Isomer	$T_{1/2}$ (yr)	$E_{\text{isomer}}$ (keV)	$E_{\text{trigger}}$ (keV)	Availability
$^{106}\text{Ag}$	418	109	46.4	$^{106}\text{Ag}(n,\gamma)^{107}\text{Ag}$
$^{107}\text{Ag}$	0.68	118	72.9	(51.8% $^{107}\text{Ag}$ ; 48.1% $^{108}\text{Ag}$ )
$^{180\text{m}}\text{Ta}$	infinite	75	1010; 2800	0.012% of natural Ta (4.1% enriched from ORNL)
$^{241\text{m}}\text{Am}$	141	49	4; 99	$^{241}\text{Am}(n,\gamma)^{242\text{m}}\text{Am}$ ( $\approx 1$ g $^{241}\text{Am}$ from ORNL)
$^{166\text{m}}\text{Ho}$	1200	6	264	$^{166\text{m}}\text{Ho}$ fully-enriched from ORNL
$^{185\text{m}}\text{Re}$	$2 \times 10^5$	149	37	$^{185}\text{Re}(n,\gamma)^{186\text{m}}\text{Re}$ (96% enriched $^{185}\text{Re}$ from ORNL)
$^{176\text{m}}\text{Lu}$	0.44	970	100	$^{176}\text{Lu}(n,\gamma)^{177\text{m}}\text{Lu}$ (75% enriched $^{176}\text{Lu}$ from ORNL)
$^{178\text{m}}\text{Hf}$	31	2446	10	$10^{-5}$ g quantities from SRS technologies; Huntsville, AL

\*Source: Joe Shumer, NRL

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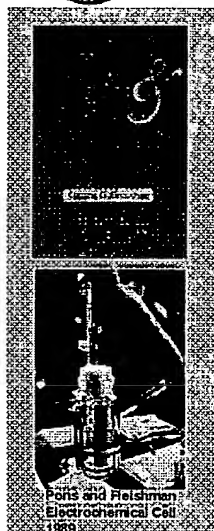
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## Low Energy Nuclear Reactions (LENR)

  
 Science Applications, Inc.


- Two branches of LENR
  - : Excess Heat
  - : Nuclear Transmutation
- Legitimate experiments by reputable researchers worldwide continue to demonstrate "excess heat" production in electro-chemistry experiments
- Other "chemistry" experiments have shown transmutation of elements and production of energetic tritons, helium and tritium
- None of these observations can be attributed to conventional chemistry
- The body of evidence supporting LENR continues to grow, but hard data still only thinly reproducible

NET: This is incorrect. The hypothesis of "two branches" is obsolete. Excess heat occurs in both D/Pd as well as Ni/H. So do transmutations.

Question: Why have LENR researchers not been killed by lethal doses of neutrons and gammas??

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## New Theoretical Developments Widom-Larsen Theory

  
 Science Applications, Inc.

*Purports to explain most LENR observations without invoking any new physics beyond the standard model.*

- LENR is a manifestation of the weak interaction - it is not fusion or other forms of strong interaction
- Many-body "patches" of collectively oscillating protons or deuterons form on metallic hydride surfaces loaded with hydrogen isotopes
- Collective oscillations of the protons/deuterons start to loosely couple to the collective oscillations of nearby surface plasmon polariton (SSP) electrons, commonly found on the surface of metals
- Coupling between the two increases the local electric field to  $>10^{11}$  V/m (about the same as the Coulomb fields seen by inner electrons)
- Intense local radiation field raises effective mass of SSP electrons so that they can react with nearby protons and deuterons to form neutrons
- Neutrons created collectively have huge quantum mechanical wavelengths and are almost always absorbed by nearby nuclei
- Gammas emitted as a result of neutron absorption are intercepted by SSP electrons and reradiated as much softer E-M energy

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## Widom-Larsen Theory Explains ...



- Excess heat in electrochemical cells
- Nuclear transmutation abundances in electrochemical cells (total rates shown to be in agreement with experiment)
- Transmutations observed in exploding wire experiments as early as 1922

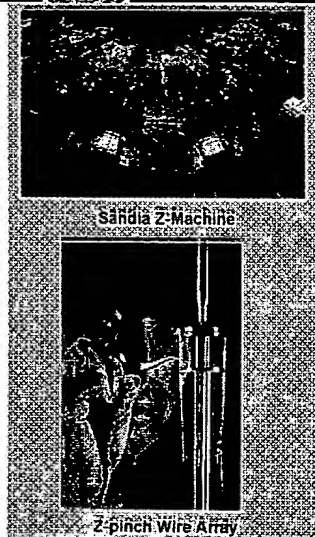
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## Advanced Nuclear Weapons Concepts



- Tailored Output Devices
  - Nuclear-driven directed energy
    - X-ray laser
    - Kinetic projectile array
  - Enhanced radiation weapon
  - Enhanced, localized EMP
- Pure Fusion Device
  - DT pellet implosion
    - Enhanced energetic material direct drive
    - Plasma Z-pinch drive
  - Essentially fall-out free
    - Some short-lived, neutron-activated radioactive isotopes

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## Other Exotica



- Dark Matter
  - Comprises about 22% of mass/energy of universe
    - Inferred from the motion of galaxies
    - Governed the earlier deceleration of the expanding universe
    - Many aspects of dark matter remain speculative
    - Density of dark matter is miniscule ( $10^{-26}$  g/cc)
- Dark Energy
  - Comprises about 74% of mass/energy of universe
    - Governs currently observed acceleration of expanding universe
    - Permeates and fills all space homogeneously
    - Density of dark energy is miniscule ( $10^{-29}$  g/cc)
- Mini Black Holes
  - A black hole of the smallest possible mass as determined by quantum mechanics
    - A degenerate state caused by runaway evaporation due to Hawking radiation
  - Mass is of order Planck's mass ( $2 \times 10^{-8}$  kg); or  $1.1 \times 10^{19}$  GeV; or 1.8 GJ (900 lbs TNT)
  - Further study warranted

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## Appendix D

# STATUTORY & TREATY REFERENCES TO NUCLEAR WEAPONS DEVELOPMENT

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## **STATUTORY & TREATY REFERENCES TO NUCLEAR WEAPONS DEVELOPMENT**

### **U.S. NUCLEAR WEAPONS OBLIGATIONS UNDER INTERNATIONAL LAW**

#### **Nuclear Non-proliferation Treaty (NPT) of 1968**

Often referred to as the “cornerstone” of international nuclear non-proliferation doctrine, the NPT embodies the aspiration to “facilitate the cessation of the manufacture of nuclear weapons” and work toward “general and complete disarmament” among nations.<sup>1</sup> In spite of the U.S. government’s frequent invocation of this treaty in diplomatic pronouncements, it continues to take actions relating to the design and production of new nuclear weapons, notably the Reliable Replacement Warhead (RRW) concept and the Robust Nuclear Earth Penetrator (RNEP) program.

During the 2000 NPT Review Conference, the five NPT-established permanent nuclear powers (U.S., U.K., China, Russia and France) restated the NPT goal of eventual nuclear disarmament, reaffirming their “unequivocal commitment to the ultimate goals of a complete elimination of nuclear weapons and a treaty on general and complete disarmament...” The P-5 statement further reiterates “the necessity of a... convention banning the production of fissile material for nuclear weapons or other nuclear explosive devices...”<sup>2</sup> While the NPT-recognized nuclear powers are thereby technically permitted to continue developing novel nuclear weapons in the absence of such a compact, doing so is widely considered antithetical to the spirit of the NPT. An additional product of the 2000 NPT Review Conference was the adoption of 13 “practical steps” toward the implementation of Article VI of the NPT concerning eventual nuclear disarmament. Research undertakings aimed at exploring new classes of nuclear weapons may violate one or more of these steps, including the agreement to move toward a “diminishing role for nuclear weapons in security policies... and to facilitate the process of their total elimination.”<sup>3</sup>

In a February 3, 2005, speech concerning U.S. compliance with Article VI, Assistant Secretary of State for Arms Control Stephen G. Rademaker, while highlighting reductions of U.S. nuclear stockpiles and the cessation of fissionable material production for nuclear weapons, issued a controversial reservation. Referring to an improved earth-penetrating capability, he made clear that the U.S. would “continue to plan for contingencies and conceptually explore technical options that could maintain the

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<sup>1</sup> Article VI, NPT: <<http://www.fas.org/nuke/control/npt/text/npt2.htm>>

<sup>2</sup> P-5 Statement on 2000 NPT Review Conference: <<http://www.ceip.org/programs/npp/npt2000p5.htm>>

<sup>3</sup> 2000 NPT Review Conference Final Document: <[http://www.armscontrol.org/act/2000\\_06/docjun.asp](http://www.armscontrol.org/act/2000_06/docjun.asp)>

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credibility of our nuclear deterrent capability. Looking at options says nothing about what we will do. The fact is that the United States is not developing any new nuclear weapons, including low-yield nuclear weapons. The study of new weapons designs under funding provided by Congress in past years for advanced concepts has been entirely conceptual.” Rademaker emphatically repeated that the U.S. spends “zero = let me repeat = zero dollars” on the development or production of new nuclear weapons.<sup>4</sup> During a May 20, 2005, committee of the 2005 NPT Review Conference, Ambassador Jackie W. Sanders, Special Representative of the President for the Non-Proliferation of Nuclear Weapons, echoed Rademaker’s tone, pointedly asserting that “the United States is not, repeat not, developing new nuclear weapons.”<sup>5</sup>

The RRW program has been criticized for violating the spirit of Article VI. Funding for this program in the FY06 Energy and Water Appropriations Act stipulated that, “any weapon design work done under the RRW program must stay within the military requirements of the existing deployed stockpile and any new weapon design must stay within the design parameters validated by past nuclear tests.”<sup>6</sup>

### **Comprehensive Test Ban Treaty of 1996**

The principal objective of the CTBT is to limit global nuclear proliferation by denying nuclear weapons states the ability to achieve technical advancements that require testing to verify. While the U.S. is a signatory to the CTBT, the Senate has not ratified the treaty. However, the 1992 Hatfield Amendment established a nuclear testing moratorium in keeping with the spirit of the CTBT. This moratorium remains in effect.

While the CTBT explicitly bans “any nuclear weapon test explosion or any other nuclear explosion,” considerable ambiguity exists concerning the technical definition of these terms.<sup>7,8</sup> Indeed, a 1987 Los Alamos National Laboratory report notes that, “a nuclear explosion has never been defined officially...”<sup>9</sup> Less ambiguous is the preamble to the treaty, which recognizes that the cessation of nuclear test explosions is necessary for “constraining the development and qualitative improvement of nuclear weapons and ending the development of advanced new types of nuclear weapons...”

### **Other Cold War Treaties**

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<sup>4</sup> Rademaker remarks, “U.S. Compliance With Article VI of the Non-Proliferation Treaty (NPT)”: <http://www.state.gov/tac/ris/rm/41786.htm>

<sup>5</sup> Sanders remarks, 2005 NPT Review Conference: [http://www.un.int/usa/05\\_100.htm](http://www.un.int/usa/05_100.htm)

<sup>6</sup> FY06 E&W Appropriations Act, P.L. 109-275: <http://thomas.loc.gov/cgi-bin/cpquery/T?&report=hr275&dbname=109&>

<sup>7</sup> CTBT text: [http://www.ctbt.org/treaty/treaty\\_text.pdf](http://www.ctbt.org/treaty/treaty_text.pdf)

<sup>8</sup> Jones, von Hippel, “The Question of Pure Fusion Explosions Under the CTBT,” *Science & Global Security*, 1998, Volume 7, pp. 129-150:

[http://www.princeton.edu/~globsec/publications/pdf/7\\_2Jones.pdf](http://www.princeton.edu/~globsec/publications/pdf/7_2Jones.pdf)

<sup>9</sup> Thorn, Robert N. and Westervelt, Donald R. “Hydronuclear Experiments,” Los Alamos National Laboratory, February 1987: <http://www.fas.org/spp/othersgov/doe/lanl/docs1/00090266.pdf>



In the texts of the Strategic Arms Limitation Talks treaties (SALT I and II), references to nuclear weapons are oblique, though commonly understood. The treaties instead refer to "strategic offensive arms," "ballistic missiles," and "ICBMs." The understanding that these terms refer to nuclear weapons is implicit. In SALT I, the word "nuclear" appears only once – in reference to the title of the NPT.<sup>10</sup> In SALT II, the parties recognize the devastating consequences of "nuclear war" and agree to "exercise restraint in the development of new types of strategic offensive arms."<sup>11</sup> In both the Strategic Arms Reduction Treaties (START I and II), references are made to "nuclear armaments" and the means for delivering them – heavy bombers, ALCMs, and so on – without offering a precise definition of "nuclear."<sup>12,13</sup> Likewise, the Anti-Ballistic Missile Treaty of 1972 makes reference to "strategic arms" and "strategic ballistic missiles" in the context of preventing "nuclear war."<sup>14</sup>

The Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Subsoil Thereof (Seabed Treaty) of 1972 prohibits the deployment of "any nuclear weapons or any other types of weapons of mass destruction" on the seabed, the ocean floor or in the subsoil.<sup>15</sup> The Limited Test Ban Treaty (LTBT) of 1963, also known as the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (or the Partial Test Ban Treaty), invokes the desire to "put an end to the contamination of man's environment by radioactive substances," a broad definition that bans not simply nuclear weapon test explosions, but "any other nuclear explosion." The treaty further prohibits any nuclear explosion that "causes radioactive debris to be present outside the territorial limits of the state under whose jurisdiction or control such explosion is conducted."<sup>16</sup>

The Threshold Test Ban Treaty (TTBT) of 1990, seeking the "cessation of the nuclear arms race" and reductions in "strategic arms" and eventual "nuclear disarmament," prohibits "any underground nuclear weapon test having a yield exceeding 150 kilotons." Article III of the treaty specifically permits "underground nuclear explosions carried out by the parties for peaceful purposes," wherein the term "explosion" is defined as "the release of nuclear energy from an explosive canister."<sup>17</sup> An outgrowth of Article III was the Peaceful Nuclear Explosions Treaty (PNET) of 1976, which seeks to "assure that underground nuclear explosions for peaceful purposes shall not be used for purposes related to nuclear weapons." Under this treaty, the parties agreed to "prohibit, to prevent and not to carry out... any explosion which does not carry out a peaceful application..." excepting tests permitted under the provisions of the TTBT.<sup>18</sup> The Strategic Offensive Reductions (SORT) Treaty of 2002 sought to reduce and limit "strategic offensive arms"

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<sup>10</sup> SALT I text: <<http://www.fas.org/nuke/control/salt1/text/salt1.htm>>

<sup>11</sup> SALT II text: <<http://www.state.gov/www/global/arms/treaties/salt2-2.html>>

<sup>12</sup> START I text: <<http://www.state.gov/www/global/arms/start.htm/start/start1.html>>

<sup>13</sup> START II text: <<http://www.fas.org/nuke/control/start2/text/treaty2.htm>>

<sup>14</sup> ABM Treaty text: <<http://www.state.gov/www/global/arms/treaties/abm/abm2.html>>

<sup>15</sup> Seabed Treaty text: <[http://www.nti.org/e\\_research/official\\_docs/inventory/pdfs/%5Caplseabd.pdf](http://www.nti.org/e_research/official_docs/inventory/pdfs/%5Caplseabd.pdf)>

<sup>16</sup> LTBT text: <<http://www.state.gov/t/ac/trl/4797.htm>>

<sup>17</sup> TTBT text: <<http://www.state.gov/t/ac/trl/5204.htm>>

<sup>18</sup> PNET text: <<http://www.fas.org/nuke/control/pnet/text/pne2.htm>>

and "strategic nuclear warheads."<sup>19</sup> This treaty was criticized in some quarters due to the ambiguity associated with the term "strategic *nuclear* warheads," which differed from the term "warheads attributed to strategic delivery systems" used in the START I Treaty.<sup>20</sup>

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## U.S. GOVERNMENT NUCLEAR WEAPONS POLICY

### Atomic Energy Act of 1947

Sec. 4 of the Act prohibits the possession or operation of facilities "for the production of fissionable material in quantities or at a rate sufficient to construct a bomb or other military weapon" outside the control of the Atomic Energy Commission (AEC). Later, in Sec. 6 the law prohibits the manufacture, production or possession of the means to "utilize fissionable materials as a military weapon, except as authorized by the Commission." The law also forbids "any research or developmental work in the military application of atomic power if such research or developmental work is contrary to any international agreement..."<sup>21</sup>

### Atomic Energy Act of 1954

Sec. 91 of the Act grants authority to the AEC to "conduct experiments and do research and development work in the military application of atomic energy" and "engage in the production of atomic weapons, or atomic weapon parts..." The term "atomic energy" is defined as "all forms of energy released in the course of nuclear fission or nuclear transformation..."<sup>22</sup> The term "atomic weapon" is defined as "any device utilizing atomic energy, exclusive of the means for transporting or propelling the device...the principal purpose of which is for use as, or for development of, a weapon, a weapon prototype, or a weapon test device..."<sup>23</sup>

Sec. 51 provides for the eventuality that "the Commission may determine from time to time that other material is special nuclear material in addition to that specified in the definition as special nuclear material. Before making any such determination, the Commission must find that such material is capable of releasing substantial quantities of atomic energy and must find that the determination that such material is special nuclear material is in the interest of the common defense and security, and the President must have expressly assented in writing to the determination..."<sup>24</sup>

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<sup>19</sup> SORT treaty text: <<http://www.whitehouse.gov/news/releases/2002/05/20020524-3.html>>

<sup>20</sup> Center for Arms Control, Energy and Environmental Studies: <<http://www.armscontrol.ru/start/sort.htm>>

<sup>21</sup> P.L. 79-585: <<http://www.gstl.gov/atomicenergyact.pdf>>

<sup>22</sup> Title 42, Section 2014c, U.S. Code

<sup>23</sup> Title 42, Section 2014d, U.S. Code

<sup>24</sup> Title 42, Section 2071, U.S. Code

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The Act grants to the President the right to "direct the Commission to (1) deliver such quantities of special nuclear material or atomic weapons to [DoD] for such use as he deems necessary in the interest of national defense, or (2) to authorize [DoD] to manufacture, produce, or acquire any atomic weapon or utilization facility for military purposes: Provided, however, That such authorization shall not extend to the production of special nuclear material other than that incidental to the operation of such utilization facilities."

### Additional definitions

The Nuclear Waste Policy Act of 1982 includes in its definition of "atomic energy defense activity" the following: "weapons activities including defense inertial confinement fusion..."<sup>25</sup>

According to Section 2332a of Title 18, U.S. Code, the definition of "weapon of mass destruction" includes the following category: "(D) any weapon that is designed to release radiation or radioactivity at a level dangerous to human life..."<sup>26</sup>

### 1953 Agreement = Department of Defense-Atomic Energy Commission

In 1953 an agreement was established between the AEC and the DoD to delineate the responsibilities of the respective agencies concerning "programs for proposed atomic weapons, their development, test, standardization, and production in accordance with military requirements." The agreement states that the "development and production of atomic weapons will be the complementary responsibilities of the AEC and the DoD"; the "development and production of nuclear systems [defined as "comprised of the fission and/or fusion material, together with those components required to convert the system from the safe condition to an explosion"] is the primary function of the AEC"; the "division of responsibilities for the development and production of atomic weapons... will be by joint agreement on each weapon or by classes of weapons between the AEC and DoD"; and that the "determination of military characteristics suitability, and acceptability... is a primary function of the DoD." The agreement also maintains that "it is fundamental to progress that both agencies pursue aggressively the study of new and radical concepts for military application of atomic energy."<sup>27</sup>

The 1953 agreement identifies six phases of nuclear weapons production:

- 1) **Weapon conception** (may be undertaken independently or jointly; either agency that wishes to pursue an idea which would involve the modification of or the new development of nuclear systems must ask the other agency to examine the practicality of at least that portion of development)

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<sup>25</sup> Title 42, Section 10101, U.S. Code

<sup>26</sup> Title 18, Section 2332a, U.S. Code:

<[http://www.law.cornell.edu/uscode/search/display.html?terms=2332a&url=/uscode/html/uscode18/uscode\\_18\\_00002332==a000-.html](http://www.law.cornell.edu/uscode/search/display.html?terms=2332a&url=/uscode/html/uscode18/uscode_18_00002332==a000-.html)>

<sup>27</sup> 1953 Agreement: <[http://www.dod.mil/pubs/foi/reading\\_room/750.pdf](http://www.dod.mil/pubs/foi/reading_room/750.pdf)>

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- 2) **Determination of Feasibility** (may be undertaken independently or jointly; DoD determines military characteristics of weapon)
- 3) **Development Engineering** (AEC launches a development program; produces prototypes; DoD gives guidance)
- 4) **Production Engineering** (AEC proceeds with production of weapon; DoD gives guidance, evaluates prototypes as necessary)
- 5) **First Production** (AEC manufactures weapon; DoD makes evaluation)
- 6) **Quantity Production and Stockpile** (AEC brings production to full scale; DoD continues appraisal of weapons performance)

**Department of Defense Directives**

DoD Directive 3150.1, entitled, "Joint Nuclear Weapons Development Studies and Engineering Projects," expands on these phases with the following directions:<sup>28</sup>

**E) 1. Concept Definition Studies (Phase 1):**

- a. Any DoD Component (with the cooperation of other DoD Components and the DoE, as desired) or the DoE may conduct a Phase 1 study to define a weapon concept and to help the DoD Component concerned and the USDR&E decide whether to proceed with a joint Phase 2 study.
- b. If the Phase 1 study foresees the modification of an existing nuclear weapon *or the development of a new nuclear weapon*, the DoD Component concerned shall ask the DoE to examine the practicability of at least that portion of the concept.

An updated version of DODD 3150.1, entitled "Joint DoD-DOE Nuclear Weapon Life-Cycle Activities," requires that DoD procedures for nuclear weapons life-cycle activities shall "Require full coordination of all nuclear weapons development, production, sustainment, and retirement projects with the DoD Components and the DOE."<sup>29</sup>

DoD Directive 2060.1, entitled, "Implementation of, and Compliance with, Arms Control Agreements," mandates that "All DoD activities shall be fully compliant with arms control agreements of the U.S. Government." The Directive requires the Under Secretary of Defense for Acquisition, Technology, and Logistics to: "As necessary, establish a DoD compliance review group (CRG) for each arms control agreement...to monitor compliance of all DoD activities and to coordinate DoD guidance on issues arising from questions of compliance"; "Certify, as necessary, that specific planned activities are in compliance with arms control agreements"; "Monitor all DoD activities for compliance with arms control agreements and, as necessary, conduct or direct reviews to determine if there are issues that should be brought before a CRG to ensure compliance"; and "Provide direction and oversight for the conduct of research and development to support DoD arms control agreement implementation and compliance."<sup>30</sup>

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<sup>28</sup> DODD 3150.1 Joint Nuclear Weapons Development Studies and Engineering Projects:

<[http://www.fas.org/nuke/guide/usa/doctrine/dod/dodd-3150\\_1.htm](http://www.fas.org/nuke/guide/usa/doctrine/dod/dodd-3150_1.htm)>

<sup>29</sup> Joint DoD-DOE Nuclear Weapon Life-Cycle Activities, March 8, 2004:

<[http://www.dtic.mil/whs/directives/corres/pdf/d31501\\_082602/d31501p.pdf](http://www.dtic.mil/whs/directives/corres/pdf/d31501_082602/d31501p.pdf)>

<sup>30</sup> DoD Directive 2060.1: <[http://www.dtic.mil/whs/directives/corres/pdf/d20601\\_010901/d20601p.pdf](http://www.dtic.mil/whs/directives/corres/pdf/d20601_010901/d20601p.pdf)>

## **Congressional Oversight of Nuclear Weapons**

According to a presentation by Stephen I. Schwartz at the 2005 Carnegie Endowment International Non-Proliferation Conference, jurisdiction over the U.S. nuclear weapons program is distributed among no fewer than 30 congressional committees and subcommittees.<sup>31</sup> Primary jurisdiction resides in the following committees:

- House Armed Services Committees
  - Subcommittee on Strategic Forces
- House Appropriations Committee
  - Subcommittee on Defense
  - Subcommittee on Energy and Water Development
  - Subcommittee on Science, the Departments of State, Justice, and Commerce
- House Energy and Commerce Committee
  - Subcommittee on Energy and Air Quality
- House Budget Committee
- House Science Committee
  - Subcommittee on Energy
  
- Senate Armed Services Committees
  - Subcommittee on Strategic Forces
- Senate Appropriations Committee
  - Subcommittee on Defense
  - Subcommittee on Energy and Water Development
  - Commerce, Justice, Science, and Related Agencies
- Senate Energy and Natural Resources Committee
  - Subcommittee on Energy
- Senate Budget Committee
- Senate Environment and Public Works Committee
  - Subcommittee on Clean Air, Climate Change, and Nuclear Safety

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## **ALTERNATIVE NUCLEAR WEAPONS DEVELOPMENT**

Among the pillars of the international nuclear nonproliferation regime = chiefly the NPT and the CTBT = considerable definitional ambiguity exists concerning the nuclear weapons and nuclear weapons-related activities proscribed under the treaties. While scholars have debated the applicability of these agreements to advanced research into non-traditional nuclear weapons = including low-yield nuclear weapons, nuclear spin

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<sup>31</sup> Schwartz, Stephen I. "A Brief History of Congressional Oversight of Nuclear Weapons," Carnegie Endowment International Non-Proliferation Conference November 8, 2005:  
<<http://www.carnegieendowment.org/static/npp/2005conference/presentations/Schwartz.pdf>>

isomers, pure-fusion weapons, antimatter/positron weapons and low energy nuclear reactions = substantial government funding has been invested in these fields.

### **Low-yield Nuclear Weapons Research and Development**

The 1993 Spratt-Furse law, included as part of the FY 1994 National Defense Authorization Act, states that, "It shall be the policy of the United States not to conduct research and development which could lead to the production by the United States of a new low-yield nuclear weapon," defined as having a yield of less than five kilotons.<sup>32</sup> This prohibition was repealed by the FY 2004 National Defense Authorization Act with the stipulation that "The Secretary of Energy may not commence the engineering development phase, or any subsequent phase, of a low-yield nuclear weapon unless specifically authorized by Congress."<sup>33</sup> However, even before the repeal of Spratt-Furse, scholars had questioned whether the ambiguity of the law's definition of permissible research left open the possibility that research on low-yield nuclear weapons could occur as long as it stopped short of being used to "develop" an actual weapon.<sup>34</sup>

As part of the Advanced Concepts Initiative of the 2001 Nuclear Posture Review, the Pentagon advocated "improved earth penetrating weapons (EPWs) to counter the increased use by potential adversaries of hardened and deeply buried facilities."<sup>35</sup> This concept would be embodied in the controversial RNEP program. The FY 2004 Energy and Water Appropriations Act includes the following provision concerning "Advanced Concepts": "The conferees provide \$7,500,000 for the [RNEP study, instead of \$5,000,000 as proposed by the House and \$15,000,000 as proposed by the Senate. The conferees remind the Administration that none of the funds provided may be used for activities at the engineering development phases, phase 3 or 6.3, or beyond, in support of advanced nuclear weapons concepts, including the [RNEP]."<sup>36</sup>

Following a contentious debate in Congress, the FY 2005 Consolidated Appropriations Act discontinued funding for RNEP. For FY 2006, while funding for RNEP was requested (to be divided between the NNSA and DoD), Congress again chose not to appropriate funds. NNSA requested no funds for RNEP for FY2007.<sup>37</sup>

### **Pure Fusion Weapons**

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<sup>32</sup> P.L. 103-160: <<http://www.cns.miis.edu/pubs/week/030528.htm>>

<sup>33</sup> P.L. 108-136: <<http://www.dod.mil/dodgc/ole/docs/2004NDAA.pdf>>

<sup>34</sup> Wang, Justine. "Congressional Bills Passed Support Bush Agenda for New Nuclear Weapons," Nuclear Age Peace Foundation. December 9, 2003: <[http://www.wagingpeace.org/articles/2003/12/09\\_\\_wang\\_congressional-bills.htm](http://www.wagingpeace.org/articles/2003/12/09__wang_congressional-bills.htm)>

<sup>35</sup> Ferguson, Charles D. "Mini-Nuclear Weapons and the U.S. Nuclear Posture Review," Center for Nonproliferation Studies: <<http://www.cns.miis.edu/pubs/week/020408.htm>>

<sup>36</sup> FY 2004 Energy and Water Appropriations Act: <<http://thomas.loc.gov/cgi-bin/cpquery/T?&report=hr357&dbname=108&>>

<sup>37</sup> Medalia, Jonathan. "Bunker Busters": Robust Nuclear Earth Penetrator Issues, FY2005-FY2007," Congressional Research Service Report, February 21, 2006: <<http://www.fas.org/spp/ers/nuke/RL32347.pdf>>

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During the 1975 NPT Review Conference, U.S. representatives issued a statement regarding laser fusion research holding that "Such contained explosions are not 'other nuclear explosive devices' in the sense of the NPT and research in this area is allowed under Article IV."<sup>38</sup> When the Clinton Administration submitted the CTBT to the Senate for ratification in 1997, its accompanying statement maintained that Inertial Confinement Fusion was allowed under the treaty.<sup>39</sup>

In a 1998 paper entitled "The Question of Pure Fusion Explosions Under the CTBT," Suzanne L. Jones and Frank N. von Hippel suggested that, "Fusion research involving implosions of deuterium-tritium targets driven by laser or particle beams appears to be widely accepted as not prohibited under the [CTBT]."<sup>40</sup> Their paper offers a technical basis for establishing a ban on the development of pure fusion weapons. The same year, scholars of the Institute for Energy and Environmental Research (IEER) published a paper, "Dangerous Nuclear Quest," arguing that laboratory fusion explosions are indeed illegal under the CTBT and that the U.S. National Ignition Facility thus violated international law. While acknowledging the difficulty in defining a "nuclear explosion" under the CTBT, the authors propose a variety of limitations – including limiting the energy releases from fusion reactions to less than the input into the fuel pellet, limiting neutron production and banning the use of tritium in systems driven by high explosives – to forestall the creation of fusion weapons without hampering innocuous fusion research.<sup>41</sup> DOE rejected the conclusion of the report, arguing that fusion experiments did not constitute "nuclear explosions" as defined by the CTBT, and further insisted that the U.S. has no program to develop fusion weapons.

Despite criticism about U.S. noncompliance with the CTBT, research involving "magnetized target fusion" has been conducted in collaboration between the Los Alamos National Laboratory and the All-Russian Institute of Experimental Physics at Sarov. Additionally, the Sandia National Laboratory has conducted research involving the use of x-rays to implode small fusion targets.<sup>42</sup>

### Nuclear Isomer Weapons

In 2003, DARPA invested \$7 million in research to study the feasibility of artificially triggering the isomer hafnium-178, with additional funding planned in subsequent years.<sup>43</sup> Research on hafnium-178 is underway at the Air Force Research Laboratory at

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<sup>38</sup> Makhijani, Arjun and Zerriffi, Hisham. "Dangerous Thermonuclear Quest" = Chapter 5: Nuclear Disarmament and Non-Proliferation Issues, Institute for Energy and Environmental Research, July 1998. <<http://www.ieer.org/reports/fusion/chap5.html>>

<sup>39</sup> Ibid.

<sup>40</sup> Jones, von Hippel, "The Question of Pure Fusion Explosions Under the CTBT," *Science & Global Security*, 1998, Volume 7, pp. 129-150: <[http://www.princeton.edu/~globsec/publications/pdf/7\\_2Jones.pdf](http://www.princeton.edu/~globsec/publications/pdf/7_2Jones.pdf)>

<sup>41</sup> Makhijani, Arjun and Zerriffi, Hisham. "Dangerous Thermonuclear Quest" = Chapter 5: Nuclear Disarmament and Non-Proliferation Issues, Institute for Energy and Environmental Research, July 1998. <<http://www.ieer.org/reports/fusion/chap5.html>>

<sup>42</sup> Jones, von Hippel.

<sup>43</sup> Weinberger, Sharon. "Scary Things Come in Small Packages," *The Washington Post*, March 28, 2004: <<http://www.washingtonpost.com/ac2/wp-dyn/A22099-2004Mar24?language=printer>>

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Kirtland, New Mexico. The Defense Technologies Information Center listed hafnium weapons in its "Military Critical Technologies List," declaring that such weapons possess "the potential to revolutionize all aspects of warfare" = evidence that research into nuclear isomers is oriented toward potential weaponization.<sup>44</sup> In 2002, DoD created the Hafnium Isomer Production Panel (HIPP) to explore the mass production of hafnium for military purposes.<sup>45</sup>

According to a May 2004 piece in *Physics Today*, "Because isomer weapons would not involve transmutation of nuclear species, they don't come under the rubric of existing nonproliferation treaties."<sup>46</sup> However, though comparatively little fallout would result from a nuclear-isomer explosion versus a traditional fission explosion, the dispersion of un-detonated isomer material as radioactive particles may, in theory at least, contradict a key tenet of the LTBT concerning the "contamination of man's environment by radioactive substances."

Despite a \$4 million budget request from the Bush Administration, the House and Senate Armed Services Committees slashed funding for Stimulated Isomer Energy Release (SIER) in the DARPA budget and recommended the transfer of responsibility for such research from DoD to the NNSA. According to the HASC report language accompanying the FY 2005 defense authorization bill, "Given the significant policy issues associated with any eventual use of an isomer weapon and given the inability of distinguished scientists to replicate the reported successful triggering experiment of 1998, the committee believes that [DoD] should not be engaged in this research. The proper agency to investigate the feasibility of this technology is the [NNSA] and its national laboratory complex."<sup>47</sup>

### **Antimatter / Positron Weapons**

According to the *San Francisco Chronicle*, the U.S. Air Force has channeled \$3.7 million to the firm Positronics Research LLC for positron research, though this funding may support national security priorities far beyond the development of advanced munitions.<sup>48</sup> In a March 24, 2004, presentation to a NASA Institute for Advanced Concepts (NIAC) conference, Kenneth Edwards of the Munitions Directorate at Eglin Air Force Base stressed the potential applications of positrons to propel continuous-flight surveillance aircraft and space vehicles with relatively little emphasis on weapons development.<sup>49</sup>

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<sup>44</sup> Schwarzschild, Bertram. "Conflicting Results on a Long-Lived Nuclear Isomer of Hafnium Have Wider Implications." *Physics Today*, May 2004: <<http://www.physicstoday.org/vol-57/iss-5/p21.html>>

<sup>45</sup> Davidson, Keay. "Superbomb ignites science dispute." *The San Francisco Chronicle*, September 28, 2003: <<http://sfgate.com/cgi-bin/article.cgi?file=/c/a/2003/09/28/MN23720.DTL&type=printable>>

<sup>46</sup> Schwarzschild.

<sup>47</sup> American Institute of Physics, "Armed Services Committees Refuse to Authorize SIER Weapon Research," FYI Number 76: June 4, 2004: <<http://www.aip.org/fyi/2004/076.html>>

<sup>48</sup> Davidson, Keay. "Air Force pursuing antimatter weapons," *The San Francisco Chronicle*, October 4, 2004: <<http://www.sfgate.com/cgi-bin/article.cgi?file=/c/a/2004/10/04/MNGM393GPK1.DTL>>

<sup>49</sup> Edwards, Ken. "Propulsion and Power with Positrons." NIAC Fellows Meeting, 24 March, 2004: <[http://www.niac.usra.edu/files/library/meetings/fellows/mar04/Edwards\\_Kenneth.pdf](http://www.niac.usra.edu/files/library/meetings/fellows/mar04/Edwards_Kenneth.pdf)>



However, Edwards did note that “no nuclear residue” would result from positron explosions, theoretically avoiding the environmental “contamination” that early test ban treaty proponents sought to prevent.

### **Low Energy Nuclear Reactions (Cold Fusion)**

In a February 2002 report entitled, “Thermal and Nuclear Aspects of the Pd/D<sub>2</sub>O System,” Dr. Frank E. Gordon, Head of the Navigation and Applied Sciences Department of the Space and Naval Warfare Systems Center, San Diego, wrote: “We do not know if Cold Fusion will be the answer to future energy needs, but we do know the existence of Cold Fusion phenomenon through repeated observations by scientists throughout the world. It is time that this phenomenon be investigated so that we can reap whatever benefits accrue from additional scientific understanding. It is time for government funding organizations to invest in this research.”<sup>50</sup> From July 31-August 3, 2006, the National Defense Industrial Association and the Office of Naval Research co-hosted a Naval Science & Technology Partnership Conference in Washington, D.C., where Dr. Gordon hosted an “LENR Breakout Session” to discuss Space and Naval Warfare Systems Command research developments in low energy nuclear reaction research.

Coverage of Dr. Gordon’s remarks in the *New Energy Times* contained the following claim about U.S. government support for Cold Fusion research: “Although the U.S. Department of Energy has yet to fund studies in the area, the Defense Advanced Research Projects Agency, long known for boldness in funding research, has been funding small LENR projects quietly for many years and recently has taken a renewed interest in the subject.”<sup>51</sup>

The Internet abounds with additional reports of undetermined veracity suggesting that DARPA support for LENR, while discreet, is ongoing. However, little evidence suggests that the focus of this research is oriented toward the development of weapons.

### **Miscellaneous = Foreign Investment in Alternative Nuclear Weapons**

A 2006 report by the Center for the Study of Weapons of Mass Destruction at National Defense University notes that, “Moscow seems intent on maintaining a full range of weapon types and exploring new ones, including precision low-yield, pure fusion, ‘clean’ penetrators’, and nuclear isomer weapons.”<sup>52</sup>

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<sup>50</sup> Technical Report 1862. “Thermal and Nuclear Aspects of the Pd/D<sub>2</sub>O System = Volume 1: A Decade of Research at Navy Laboratories.” <<http://www.spawar.navy.mil/sti/publications/pubs/tr/1862/tr1862-vol1.pdf>>

<sup>51</sup> Krivit, Steven and Daviss, Bennett. “Extraordinary Evidence.” *New Energy Times*, November 10, 2006. <<http://lenr-canr.org/acrobat/KrivitSextraordin.pdf>>

<sup>52</sup> WMD Center 2006 Annual Symposium: “The Future Nuclear Landscape: New Realities, New Responses.” <<http://www.ndu.edu/WMDCenter/docUploaded/Symposium%202006%20-%20Key%20Themes.pdf>>



July 25, 2012

<b>Case Before the Board (and Higher Court)</b>	<b>#pages</b>	<b>Date</b>
00-970-Remand from Board.pdf		
01-457-DecisionBoardJuly272001.pdf	44	7/27/2001
02-457-ReqReconsid-457Aug2001.pdf	21	8/15/2001
03-457-1240-ReplyBrief07152002.pdf	37	7/15/2002
04-457-FedAppellCourtSupAppx-1.pdf	37	7/15/2002
05-457-FedAppellCourtSupAppx-2.pdf	33	7/15/2002
06-457-1240-ReqPanelRehearing112002a.pdf	25	11/15/2002
07-457-1240-PetCert02212003.pdf	52	2/21/2003
08-457-1240-RehearingPet09012003.pdf	31	9/1/2003
09-143-DecisionBoard.pdf	16	11/20/2010
10-143-ReqRehearing.pdf	102	12/31/2010
11-937-DecisionBoard1999.pdf	28	7/30/1999
12-937-937-fedAppCourt-ReplyBrief.pdf	33	6/15/2000
13-937-fedAppCourt-PetRehearing07.pdf	23	11/20/2000
14-937-PetCertiorari.pdf	56	1/8/2001
15-970-DecisionBoard.pdf	23	6/22/1999

Paper No: 36

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

MAILED

OCT 18 1995

PAT & T.M. OFFICE  
BOARD OF PATENT APPEALS  
AND INTERFERENCES

Ex parte MITCHELL R. SWARTZ

Appeal No: 94-2926  
Application: 07/760,970

ORDER REMANDING TO EXAMINER

An Information Disclosure Statement was filed April 28, 1994 (Paper No. 34). A review of the file reveals that such Information Disclosure Statement was not considered by the Primary Examiner. It is not apparent from the record that the examiner notified applicant of whether this paper was considered and of whether their submission did not meet the criteria set forth in 37 C.F.R. §§ 1.97 and 1.98.

Also on April 28, 1994, the following papers were filed by applicant: (1) Declaration of Isidor Straus (Paper No. 33); (2) Reply Brief to Examiner's Answer [pursuant to 1.193] (Paper No. 32), and (3) Reply Brief Declaration of Dr. Mitchell Swartz

Application for patent filed September 17, 1991.

Appeal No. 94-2920  
Application 07/760,970

(also numbered Paper No. 32). In response to the Reply Brief, the examiner entered a letter (Paper No. 35) dated May 13, 1994 indicating that the reply brief had been entered and considered. However, there is nothing in the record indicating that the examiner considered the appropriateness of items (1) and (3) above under 37 C.F.R. 1.195. Likewise, a Petition to the Commissioner Pursuant to 37 C.F.R. 1.181 (Paper No. 27) was filed January 7, 1994 and remains unanswered.

Accordingly, it is

ORDERED that the application is remanded to the examiner for consideration of the appropriateness of the Information Disclosure Statement, and it is

FURTHER ORDERED that the application is remanded to the examiner for consideration of the appropriateness of the Declaration of Isidor Straus (Paper No. 33) and the Reply Brief Declaration of Dr. Mitchell Swartz (Paper No. 32), and it is

FURTHER ORDERED that the application is remanded to the examiner for consideration of the Petition to the Commissioner Pursuant to 37 C.F.R. 1.181 (Paper No. 27).

A communication must be sent to applicant indicating the

Appeal No. 94-2920  
Application 07/760,970

Examiner's position with respect to all issues set forth above:

The application, by virtue of its "special" status, requires immediate action. See Manual of Patent Examining Procedure, § 708.01(d). It is important that the Board of Patent Appeals and Interferences be informed promptly of any action affecting the appeal.

BOARD OF PATENT APPEALS  
AND INTERFERENCES

By: 

AMALIA L. SANTIAGO  
Program and Resources Administrator  
(703) 308-9797

cc: MITCHELL R. SWARTZ  
16 PEMBROKE ROAD  
WESTON, MA 02193

Paper No. 35

UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Ex parte MITCHELL R. SWARTZ, Pro se

**tVIAIL, ~.D** Appeal No. 1998-2593  
Application No. 08/406,457'

**JUL  
& TM**

**OFFICE**

ON BRIEF

**AND INT~EALs**

Before METZ, WARREN, and DELMENDO, Administrative Patent  
Judc~es. By the Board.

DECISION ON APPEAL

This is an appeal pursuant to 35 U.S.C. § 134 from the final rejection of claims 13, 14, 21, 22 and 24 through 39, all the claims in the application. The subject matter of the claims on appeal is directed to so-called "cold fusion" technology (Specification, pp. 3-7)

Representative claims 13 and 34 are reproduced below:

13. In a process for producing a product from a sample of nickel which is loaded with an isotopic fuel using electrolysis, a method to determine the optimum electrical drive condition for said sample and thereby characterize said sample that comprises in combination

holding said sample into a calorimeter containing more than two rings with barriers between said rings,

filling with liquid the volume between each said ring,

supplying said isotopic fuel for said loading into said material,

loading said isotopic fuel into said sample by means of a power supply and electrical circuit,

thermally monitoring said liquid in each said ring,

deriving the thermal response of said sample by computational means including accounting for the mass and temperature distribution of at least one barrier between said rings,

increasing through a series of at least three incremental steps the electric power drive conditions of said electrical circuit,

deriving for each said step data consisting of the thermal output relationship of said sample as function of said drive steps,

thereby deriving an optimum drive condition of said sample.

34. In a process for producing a product from a sample of a material which is loaded with an isotopic fuel, a method to maximize the quantity produced of said product by said sample that comprises in combination;

loading said sample with said isotopic fuel by driving said sample as a cathode in combination with an anode and an electrical power supply,

monitoring said product obtained from said sample of material,

varying the input electrical drive conditions,

integrating the accumulated data to determine the optimum electrical drive condition for said sample of material,

characterizing said sample by the peak relative output of said product at said optimum, and

driving said sample at said optimum input electrical drive condition.

Prior art references relied upon by the examiner as evidence of obviousness are:

Pons et al. (Pons) WO 90/10935 Sep. 20, 1990

(published World Intell. Prop. Org. Application)

Fleischmann et al. (Fleischmann '93), "Calorimetry of the Pd-D<sub>2</sub>O

system: from simplicity via complications to simplicity," 176 Physics Letters A, pp. 118-29 (1993)

References of record<sup>2</sup> relating to cold fusion theories published following the initial report by Fleischmann and Pons

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Several of these references were cited in the prosecution of Applications 07/339,976, filed April 18, 1989; 07/371,937 filed June 27, 1989; and 07/760,970, filed September 27, 1991, all of which were identified by the appellant as applications with related appeals (Appeal Brief, Paper No. 25, p. 4).



(J. Electroanal. Chem., "Electrochemically induced nuclear fusion of deuterium," 261 J. Electroanal. Chem., pp. 301-08(1989)) are:

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Albagli et al. (Albagli), "Measurement and Analysis of Neutron and Gamma-Ray Emission Rates, Other Fusion Products, and Power in Electrochemical Cells Having Pd Cathodes," 9 Journal of Fusion Energy, no. 2, pp. 133-48 (1990)

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Besenbacher et al. (Besenbacher), "Search for Cold Fusion in Plasma-Charged Pd-D and Ti-D Systems," 9 Journal of Fusion Energy, no. 3, pp. 315-17 (1990)

Bishop, "Fusion Brouhaha May Be Settled Soon by Helium Test," The Wall Street Journal, p. B4 (May 10, 1989)

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Chandler, "Government lab finds evidence cold fusion is real," The Honolulu Advertiser, 1 unnumbered page (May 25, 1989).

Chapline, "Cold Fusion," appearing in "Proceedings of the NATO Advance Study Institute on the 'Nuclear Equation of the State'," (Peniscola, Spain, May, 1989) j~ UCRL, No. 101583, pp. 1-9 (Livermore, CA, Lawrence Livermore National Laboratory, July 1989)

Clarke, "An Odyssey of Sorts," Discover Magazine, pp. 68-69 (May 1997)

Cooke, "Report of Foreign Travel of J. F. Cooke" Memorandum in ORNL Foreign Trip Report (ORNL/FTR-3341), pp. 1-8, 10-15 (Oak Ridge, TN, Oak Ridge National Laboratory, 1989).

Cribier et al. (Cribier), "Conventional Sources Of Fast Neutrons In 'Cold Fusion' Experiments," 228 PHYSICS LETTERS B, no. 1, pp. 163-66 (Sept. 7, 1989)

Dagani (Dagani '92), "Cold fusion takes a licking, but keeps on ticking," Chemical & Engineering News, 1 unnumbered page, (Mar. 1992)

Dagani (Dagani '93), "Latest Cold Fusion Results Fail To Win Over Skeptics," Chemical & Engineering News, pp. 38-41 (June 14, 1993)

Ewing et al. (Ewing), "A Sensitive Multi-Detector Neutron Counter Used to Monitor 'Cold Fusion' Experiments in an Underground Laboratory; Negative Results and Positive Artifacts," 37 IEEE Transactions on Nuclear Science, no. 3, pp. 1165-70 (June 1990)

Faller et al. (Faller), "Investigation of Cold Fusion in Heavy Water," d37 J. Radioanal. Nucl. Chem.. Letters, no. 1, pp. 9-16 (1989)

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The appealed claims 13, 14, 21, 22 and 24 through 39 stand rejected under 35 U.S.C. § 112, first paragraph, enablement requirement, and under 35 U.S.C. § 101 for lack of operability or utility. Additionally, appealed claims 34-38 also stand rejected under 35 U.S.C. § 103 over Pons or Fleischmann '93.

#### BACKGROUND

In the spring of 1989, electrochemists B. Stanley Pons of the University of Utah and Martin Fleischmann of South Hampton University in England reported that they had successfully carried out a sustained nuclear fusion reaction at room temperature (i.e., "cold fusion") in a small jar on a laboratory table top (Fleischmann '89). The Pons/Fleischmann experimentation involved operation of a common electrolytic cell with a palladium cathode and a heavy water (deuterium oxide) electrolyte solvent. The cells used by Pons/Fleischmann were part of a calorimeter<sup>4</sup> whose temperature rise on a few occasions indicated about 10 percent more power leaving the cell than the electrical power used to run it. Pons/Fleischmann also thought that they had detected a gamma radiation characteristic of neutrons passing through water.

<sup>4</sup>See page 1 of Kee, "What is the current scientific thinking on cold fusion? Is there any possible validity to this phenomenon?," Scientific American, (circa 1997), on line <<http://www.sciam.com/askexpert/physics/physics6.html>> (copy attached)

That palladium was a metal capable of absorbing large amounts of gaseous hydrogen was well known, and in the Pons/Fleischmann cold fusion" apparatus, deuterium (heavy hydrogen) ions ( $D^+$  ions) allegedly appeared to go into the palladium cathode's crystal lattice about as readily as regular hydrogen ions ( $H^+$ ). However, what generated great skepticism for those skilled in the art were the claims of Pons/Fleischmann that a sustained nuclear fusion reaction at room temperature had been demonstrated which allegedly produced great amounts of energy, for example, four watts of power for each watt of input power).

A part of the record before us in this appeal involves publications describing the contemporaneous attempts of those skilled in the art to duplicate the Pons/Fleischmann results. The experimentation described in these documents constitutes compelling objective evidence justifying the initial disbelief of those skilled workers in the Pons/Fleischmann promise of clean, cheap, and abundant energy without side effects from "tabletop" cold fusion.

Exemplary of the initial reports from skilled workers is the statement from the cold fusion team at the United Kingdom Atomic Energy Authority at Harwell (see Cooke, p. 5) that after a

~See Huizenga, second full paragraph at page ix.

comprehensive experimental program involving a monumental effort attempting to verify the Pons/Fleischmann cold fusion claims that

"In none of these experiments was there any evidence of fusion taking place under electrochemical conditions."

and

there was no evidence of excess heat generated by any of their cells.

In similar fashion, a team of scientist at the California Institute of Technology (see Lewis, p. 525) indicated that

With a variety of metallurgical pretreatment procedures and different electrolytes, no evidence has been obtained for any excess enthalpy, neutron, gamma ray, tritium or helium production during electrolysis of  $D_2O$  with palladium cathodes. [Emphasis added.]

Likewise, researchers at Sandia National Laboratory (see Ewing, p. 1165) reported that

None of the more than thirty cold fusion systems that we investigated produced any detectable neutron emission, with an average statistical uncertainty of 5 neutrons per hour (one standard deviation). No significant neutron bursts were detected . .

And from a team of researchers at the Massachusetts Institute of Technology (see Albagli, p. 133), it was stated

Within estimated levels of accuracy, no excess power output or any other evidence of fusion Products was detected. [Emphasis original.]

Finally,<sup>6</sup> in criticizing the Pons/Fleischmann report, Huizenga, in his book entitled "Cold Fusion: The Scientific Fiasco of the Century," concluded at p. 39 that

the craving for fame, notoriety and patent rights took precedence over following the normal scientific procedures.

Against the above background of skepticism and failure of experimenters worldwide to reproduce the results allegedly obtained by Pons/Fleischmann, appellant filed, inter alia, Applications 07/371,937 on June 27, 1989 and 07/760,970 on September 17, 1991 respectively directed to "methods and systems to monitor and accelerate electrochemically induced nuclear fusion reactions" and "methods and systems to control cold nuclear fusion." In each of these applications, "cold fusion~~ was treated as though it were a well-known, readily reproducible process. However, in each of these earlier applications, the examiner's rejections of the claims for lack of operability or utility under 35 U.S.C. § 101 and lack of enablement under 35 U.S.C. § 112, first paragraph, were sustained by the Board. See the Board's decisions in Appeal Nos. 1994-2921 and 1994-2920.

6 Numerous other publications referred to in the Answer report similar findings and skepticism from the scientific community regarding the purported results obtained from the original cold fusion experiments.

Significantly, in In re Swartz, 232 F.3d 862, 864, 56 USPQ2d 1703, 1704 (Fed Cir. 2000), in an appeal from the Board's decision entered in Appeal No. 1994-2920, our reviewing court stated that the "PTO provided substantial evidence that those skilled in the art would 'reasonably doubt' the asserted utility and operability of cold fusion," based on several references showing that results in the area of cold fusion were irreproducible." Further, the Swartz court indicated that based on the PTO's finding that the application contained no disclosure of any operative embodiment, to practice the invention, a person of ordinary skill in the art would have had to rely on the art known at the filing date,<sup>7</sup> September 17, 1991. Since evidence was not of record that "the concept of the invention could have been practiced by a person skilled in the art at the time of the invention without undue experimentation," the court affirmed the judgement of the Board that as a matter of law the application did not satisfy the enablement requirement of 35 U.S.C. § 112, first paragraph.

7

The sufficiency of an application disclosure under Section 112, first paragraph, "enablement requirement," must be judged as of its filing date. "It is an applicant's obligation to supply an enabling disclosure without reliance on what others may publish after he has filed an application on what is supposed to be a completed invention. If an applicant cannot supply enabling information, he is not yet in a position to file." In re Glass, 492 F.2d 1228, 1232, 181 USPQ 31, 34 (ccpA 1974) . Thus, an appellant cannot cure an insufficient disclosure by relying on publications or other material published after the filing of an application unless it is shown that such later publications are evidence of the state of the art existing on the filing date of the application. In re Hogan, 559 F.2d 595, 605, 194 [JSPQ 527, 537 (CCPA 1977)

The present application, filed approximately four years after the 07/760,970 application reviewed by the Swartz court, is said to involve "a novel method and system to examine a material for activity concerning the desired reactions." See the Specification, page 7, last paragraph. Referring to the "proper loading" of palladium with enough physically absorbed deuterium to obtain the "desired reactions," appellant again presumptively asserts in his Specification that, in effect, cold fusion is reproducible, but that "[t]he increase in reproducibility of cold fusion has occurred ~ as matter of isotopic fuel loading has been applied." (Emphasis original.) See the Specification at p. 6, lines 12 and 13. In this regard, appellant contends that many negative results may be caused by "inadequate loading," the "failure to monitor said loading," or the "failure to activate which problems are allegedly solved by following the teachings in, inter alia, appellant's applications 07/760,970 and 07/371,937, neither of which disclosed an operative embodiment. See the specification at p. 6, lines 1-17 and the respective prior Board decisions. Thus, appellant in this appeal, again by presuming that "cold fusion~~ is a well-known, readily reproducible process, attempts to support a finding of utility and operability of the claimed "cold fusion" invention in part by incorporation by reference of subject matter described in the related applications which have previously been reviewed by the Board and our reviewing court.

Unlike the prior applications referred to above, however, the present application reportedly demonstrates that reproducible reactions are achieved when using, inter alia, nickel spiral cathodes with platinum foil anodes under controlled moderate current density conditions. See the Specification at p.26, lines 8-11 and lines 19-21 and Table 3. Apparently, the nickel cathodes are loaded by following the teachings in application 07/371,937 and by lowering the electrode assemblies into a chamber filled with a solution of a LiOD and heavy water ( $D_2O$ ) See the Specification at p. 15, first full paragraph. Supposedly, appellant's described nickel cathodes possess the correct "variations in microcomposition, morphology, crystalline defects" as well as have the correct geometry and the correct electrical properties for purposes of achieving the desired "cold fusion" reactions. See the Specification at p. 19, lines 4-7 and p. 7, lines 3-5. The "optimum [electrical] drive condition" for the nickel "sample" is determined, in part, through the use of a calorimeter containing more than two rings with barriers between the rings. See appealed claim 13.

In describing Appellant Swartz's work with nickel cathodes in light water in a specially designed ultra-low noise calorimeter (presumably subject matter addressed in the present application), Rothwell<sup>8</sup> indicates that

Swartz has spent tremendous effort designing, perfecting and calibrating the calorimeters, which have a complex design I have not seen elsewhere. They are boxes within boxes, and the heat is measured repeatedly as it passes from one box to the next outer box. This could be a superb research tool, but if your purpose is to convince people of the reality of a phenomenon, I feel it is a mistake to use a new calorimeter design. People will say your results are artifacts from a new, untested design. They will have no experience working with similar instruments, and no basis to judge whether your instrument is working or not.

Cold fusion is mysterious enough; you should not investigate it with mysterious and exotic instruments, unless you have no choice . . .

Thus, appellant in this application seeks to establish the concept or phenomenon of "cold fusion," in part, through the use of data obtained by "exotic" instrumentation which itself raises immediate questions as to its operability.

<sup>8</sup>See Rothwell, "The 7th International conference on Cold Fusion -Initial Impressions and an Overview," 4 Infinite Energy, no. 19, p. 29 (1998), (copy attached to appellant's Reply Brief, Paper No. 29)



THE REJECTIONS UNDER 35 U.S.C. § 112  
AND 35 U.S.C. § 101

We address the rejections of the appealed claims under 35 U.S.C. § 112, first paragraph, "enablement requirement," and under 35 U.S.C. § 101 together, since these rejections involve questions which are closely related. Process Control Corp. v. HydReclaim Corp., 190 F.3d 1350, 1358, 52 USPQ2d 1029, 1034 (Fed. Cir. 1999)

To satisfy the "enablement requirement" of the first paragraph of Section 112, a patent application must adequately disclose the claimed invention so as to enable a person skilled in the art to practice the invention at the time the application was filed without undue experimentation. Enzo Biochem, Inc. v. Calgene, Inc., 188 F.3d 1362, 1371-72, 52 USPQ2d 1129, 1136 (Fed. Cir. 1999). The utility requirement of Section 101 mandates that any patentable invention be o~erable to achieve useful results. See Brooktree Corp. v. Advanced Micro Devices, Inc., 977 F.2d 1555, 1571, 24 USPQ2d 1401, 1412 (Fed. Cir. 1992). Thus, if the claims in an application fail to meet the utility requirement because the invention is inoperative, they also fail

to meet the "how-to-use aspect" of the "enablement requirement" because a person skilled in the art cannot practice the invention. See Process Control, 190 F.3d at 1358, 52 USPQ2d at 1034-35; see also In re Ziegler, 992 F.2d 1197, 1200, 26 USPQ2d 1600, 1603 (Fed. Cir. 1993) ("The how to use prong of section 112 incorporates as a matter of law the requirement of 35 U.S.C. § 101 that the specification disclose as a matter of fact a practical utility for the invention.") Lack of utility because of inoperativeness is a question of fact, Fregeau v. Mossinghoff, 776 F.2d 1034, 1038, 227 USPQ 848, 851-52 (Fed. Cir. 1985), and the absence of enablement is a legal conclusion based on underlying factual inquiries set forth in, inter alia, In re Wands, 858 F.2d 731, 735-36, 8 USPQ 2d 1400, 1402-03 (Fed. Cir. 1988). See Enzo, 188 F.3d at 1369, 52 USPQ2d at 1134.

As in the previous Swartz appeals before the Board (Appeal Nos. 1994-2921 and 1994-2920), based on the law and the facts of record, we again sustain the examiner's herein stated rejections under the above sections of the statute.

With respect to the questions raised under 35 U.S.C. § 101, initially we note the examiner's holding, by reference to his rejection under 35 U.S.C. § 112, first paragraph, that the utility of the claimed invention is based upon allegations that

would not be readily accepted by a "substantial portion of the scientific community."<sup>9</sup> See the Answer at p. 11, last paragraph, and p. 15. Before utility, which is a question of fact, is determined, claims must be interpreted as a matter of law to define the invention to be tested for utility. Raytheon Co. v. Roper Corp., 724 F.2d 951, 956, 220 USPQ 592, 596 (Fed. Cir. 1983), cert. denied, 469 U.S. 835 (1984). Further, "[w]hile a patent covering a meritorious invention should not be struck down because the patentee has misconceived the scientific principle of his invention, the error cannot be overlooked when the misconception is embodied in the claim." Id. Moreover, it is for the "invention as claimed that enablement must exist." Id. Thus, when a claim is directed to accomplishing an unattainable result, the claim is appropriately rejected under either 35 U.S.C. § 101 or 35 U.S.C. § 112, first paragraph, enablement requirement. Id.

9 To define those of skill in the art as only those people who investigate "cold fusion" as a real phenomenon is a fundamental error made by appellant.

The preamble of appellant's independent claims 13, 21, and 34 is directed to a process for producing a "product" from a sample of material loaded with an isotopic fuel. The effect

preamble language to be given is determined by reviewing the entirety of an appellant's disclosure to gain an understanding of what appellant actually invented and intended to encompass by the claim. See Corning Glass Works v. Sumitomo Elect. U.S.A., Inc., 868 F.2d 1251, 1257, 9 USPQ2d 1962, 1966 (Fed. Cir. 1989) Appellant states in his Specification that "it is a principal object of the present invention to provide a novel method and system to examine a material for activity concerning the desired reactions" (Specification, p. 7) . Appellant further states that "[a]nother object of the present invention is to provide a novel method to detect specific materials which demonstrate the activity required for potential bursts, or steady state levels, of these reactions." Id. We note that the only "desired reactions" disclosed in the specification involve the reactions related to cold nuclear fusion (Specification, pp. 3-6) . In addition, appellant identifies "excess heat" as "[t]he chief product of the cold fusion reaction(s)" (Specification, p. 4) Helium, "ash," and other particles (tritium, neutrons, rare heavy elements) are also listed among the "product[s] of . . . cold fusion reaction(s)". Id. Only cold fusion products are, thus, encompassed by the preamble reference to "product" in the recited independent claims.

It is proper to use the specification to interpret what an appellant meant by a word or phrase in the claim. See In re Morris, 127 F.3d 1048, 1053-56, 44 USPQ2d 1023, 1027-30 (Fed. Cir. 1997) . The above excerpts clearly indicate that what appellant Swartz invented and intends to be encompassed by the claims directly involves cold fusion reaction. As appellant readily acknowledges in his Appeal Brief at p. 7, the "present invention" relates to the use of cold fusion systems.

Here, since we agree with the examiner that the evidence of record supports a finding that appellant's claims are directed to accomplishing an "unattainable result," i.e., a result that is not attained in a reproducible manner, we sustain the stated rejections under 35 U.S.C. § 101 and under the "enablement requirement" of 35 U.S.C. § 112, first paragraph.

Like the previous Swartz appeals, there is substantial evidence of record that results in the area of "cold fusion" were irreproducible as of the filing date of this application, and that those skilled in this art would "reasonably doubt" the asserted utility and operability of cold fusion. Even those workers that have continued to experiment and to believe in the "cold fusion" process candidly acknowledge that reproducibility remains a problem. Thus, Melvin S. Miles in a "To whom it may

concern" letter'<sup>0</sup> dated April 30, 1996, indicated that his experiments "have been very difficult to reproduce in any consistent manner. There are simply too many variables that we do not yet understand." Accordingly, even one year after the filing of the present application, persons investigating "cold fusion" as a real phenomenon conceded that because of yet understood multiple variables, reproducibility was a significant problem.

10 Copy attached to "Declaration of Dr. Mitchell Swartz Supporting Appeal Brief." (Paper No. 25)

Moreover, appellant's Specification does not teach one of ordinary skill in this esoteric art how to achieve reproducible results. Although appellant's Specification describes the use of certain nickel cathodes in allegedly successful cold fusion experiments (see our discussion at pp. 18 and 19 of this decision), the examiner found in his Answer at p. 12 that:

The disclosure is insufficient and non-enabling as to how and in what manner, the invention can be carried out so as to provide an operative embodiment. There is no adequate description nor enabling disclosure of specific parameters of a specific operative embodiment of the invention, including exact experimental structure and conditions. It is noted that the specification appears to set information for some of the parameters, however, there is no disclosure . . . of a specific operative embodiment . . . , including exact material, purity, density, lattice storage site size, electrode size, pressure, temperature, voltage, composition and dimensions of the lattice, isotope ratios (e.g., D/Pd), etc. [Emphasis added.]

As we indicated earlier, appellant apparently would have us believe that the described nickel cathodes have the correct "variations in microcomposition, morphology, [and] crystalline defects" required for "cold fusion" reactions, although appellant has failed to specifically disclose just what these parameters are. Thus, appellant's Specification provides no teachings that would enable one of ordinary skill in this art to conduct any reproducible process involving cold fusion without undue experimentation. "Where as here, the claimed invention is the application of an unpredictable technology in the early stages of development, an enabling description in the specification must provide those skilled in the art with a specific and useful teaching." (Emphasis added.) Genentech, Inc. v. Novo Nordisk, 108 F.3d 1361, 1367-68, 42 USPQ2d 1001, 1006 (Fed. Cir. 1997) . Appellant's Specification fails to provide such a "specific and useful teaching" in an art area which, if anything, is highly unpredictable and was in an "early stage[] of development" when appellant filed this application.

The examiner relies on a number of references published prior to the filing date of appellant's application to establish that many in the scientific community never accepted the claims that "excess energy" was generated by the cold fusion process (Examiner's Answer, pp. 6-9). Examples of the references relied on by the examiner are Huizenga, Jones I and II, Dagani '93, and Taubes. The examiner relies particularly on Morrison to establish the "current state" of cold fusion on January 17, 1997, a date well after the filing date of this application. Morrison's report indicates that cold fusion was at this time still not fully accepted by a substantial portion of the scientific community.

'11 Douglas R. O. Morrison, a physicist and the author of this Report, was for 38 years a researcher at CERN, the European laboratory for particle physics near Geneva. Morrison was a longtime observer of cold fusion research. See page 3 of Kee, "What is the current scientific thinking on cold fusion? Is there any possible validity to this phenomenon?," Scientific American, (circa 1997), on line  
<<http://www.sciam.com/askexpert/physics/physics6.html>>.

Morrison, who questions the concept of cold fusion, details the events that transpired at the Sixth Cold Fusion Conference. This Report refers to a number of presentations provided before an audience of scientists receptive to the concept of cold fusion. In addition, this Report balances the reference to those presentations by pointing out the general acknowledgment by some presenters that there is still a lack of reproducibility (p. 2, Section 2.1; p. 4, second full paragraph; p. 6, Section 5.1, item d; p. 8, first paragraph of Section 7) and that no evidence in favor of cold fusion was presented (p. 12, Section 13) .



On p.8 of the Examiner's Answer, the Examiner also relies on Rabinowitz (p. 11 of the reference) and the Abstract of Miles II ("[r]eproducibility continues to be the major problem in this controversial research area," ) as further evidence respecting the continuing problem with reproducibility of results and on the Miller Memo to establish the lack of concrete evidence of excess heat.

Appellant's response provides a discussion of a number of references and declarations submitted in an attempt to establish the feasibility'<sup>2</sup> of the cold fusion process (Appeal Brief, pp. 30-60 and 67-71) . Appellant supplemented this discussion with a Reply Brief filed June 29, 1998 (Paper No. 29) and a Supplemental Reply Brief filed August 3, 1998 (Paper No. 31)

12 The extent of appellant's burden to establish the feasibility of cold fusion is highlighted by the remarks of Michael J. Schaffer, a senior scientist and a "fairly neutral observer" at one of the major U.S. fusion research laboratories who stated, 'Mg]iven the extraordinary nature of the claimed cold fusion results, it will take extraordinary high quality, conclusive data to convince most scientists, unless a compelling theoretical explanation is found first.'" See pages 1-3 of Kee, "What is the current scientific thinking on cold fusion? Is there any possible validity to this phenomenon?," Scientific American, (circa 1997) on line <<http://www.sciam.com/askexpert/physics /physics6.html>>.

Nevertheless, even in light of the additional submissions, we find that appellant has failed to demonstrate that as of the filing date of the present application, cold fusion processes could be reproducibly carried out.

Appellant argues that the Office's references are flawed and outdated (Appeal Brief, p. 30, paragraph 86) . In addition, appellant argues that some of the references are theoretical criticisms based on older experiments which do not use the techniques disclosed (Appeal Brief, p. 30, paragraph 86) . This argument is directed to the examiner's reliance on periodicals, TV shows (NOVA), Taubes, Huizenga, Jones I and II references.

Appellant argues that the reliance on non-peer reviewed periodicals, such as Dagani '93 and Hiltz, "are not fair representative appraisals of new technologies" (Appeal Brief, p. 31, paragraph 87) . In support of this argument, the appellant recites a number of non-peer reviewed periodicals that support cold fusion (Bishop '92, Bishop '93, Bishop '96, Pollack and Clarke) . The appellant also refers to documentaries by the CBC and BBC which "meticulously researched and reported the truth surrounding cold fusion" (Appeal Brief, p. 32, paragraph 88) . We note that the periodicals and TV shows cited by the appellant and the examiner amount to press releases or testimonials which both support and reject appellant's cold fusion theory without providing the necessary details and data from which a person with ordinary skill in the art can qualify the nature of the release. These references may only serve as a measure of the pulse of the scientific community with respect to this topic at best. However, due to the inadequacies of the respective disclosures, they offer little in terms of their usefulness and acceptance by the scientific community as a whole vis--vis the claimed subject matter.

Concerning Taubes, Huizenga, Jones I and Jones II, the examiner primarily relies on these references to establish that the concept of cold fusion remains the subject of much debate in the scientific community as a whole (Examiner's Answer, Paper No. 30, pp. 6-7)

The Taubes publication appears to be a result of an extensive effort to interview people who have been involved in some manner with cold fusion, including those that appear to be in favor as well as those that remain skeptics (pp. 475-481)

Huizenga's publication details the early developments and claims concerning cold fusion that transpired in 1989. A review of the excerpts provided indicates that Huizenga did consider, or at least was aware of, activities during 1990 and 1991 in preparing his book (Huizenga, pp. 128, 132, 134, 136, and 143 are illustrative)

In addition, Appendix III of Huizenga's book lists a chronology of events up to June 1991 (note that the filing date of this application is March 1995) related to cold fusion issues. The credibility of his publication derives from the report issued by the Energy Research Advisory Board Cold Fusion Panel, which Huizenga co-chaired.<sup>3</sup> The strength and credibility of the panel comes from twenty-two distinguished members that served in the panel (Appendix II, p. 292)

<sup>3</sup>While the report issued by the United States Department of Energy - Energy Research Advisory Board (ERAB) Panel is not part of the record, it is significantly discussed in Chapter VII of Huizenga's publication, Cold Fusion: The Scientific Fiasco of the Century (p. 86) . It is noted that the (ERAB) Panel concluded in its Executive Summary of the report that the experimental results on excess heat from calorimetric cells "reported to date" did not present convincing evidence that "useful" sources of energy would result from the phenomena attributed to cold fusion. The Panel also concluded that experiments "to date" did not present convincing evidence to associate the reported anomalous heat with a nuclear process. Significantly, the stated position of the United States Department of Energy as of October 1997 remained that position set forth in this report. See the Miller Memo, of record.

Jones I (Steven E. Jones et al.) evaluates the results of experimentation conducted by M. H. Miles, a proponent of cold fusion (p. 6966), who as noted earlier has candidly acknowledged the problem of reproducibility of cold fusion results.

The Jones I article provides a detailed analysis of the claims made by Miles in terms of excess heat production and nuclear product detection. Briefly, the article points out that the claims were based on an experiment that was conducted inadequately (p. 6968, second column; p. 6969, first and second columns) and concludes that the claims of cold fusion are inconsistent (Conclusions; p. 6971). On the other hand, Jones II (Jonathan E. Jones et al.) attempts to provide a traditional explanation for the excess heat by establishing the same as a result from a chemical reaction between  $H_2$  or  $D_2$  with  $O_2$  to produce  $H_2O$  or  $D_2O$  (Discussion, p. 6977)

While appellant may argue that these references are irrelevant to the present invention (Appeal Brief, p. 34, paragraph 90), the fact that appellant's invention is directed to the contested field of cold fusion makes them significant. The publications cited by the examiner span a period from 1989 to 1997, which incorporates the date in which this application was filed (March 1995). In addition, the numerous references cited by the appellant also span a similar period. It is quite clear that at the time this application was filed, cold fusion technology was still controversial and not accepted by the scientific community as a whole.

Moreover, it is a fundamental error to define those of ordinary skill in appears to have done, as only those people fusion as a real phenomenon.

Appellant also argues that the Office (PTO) relies on publications which had "significant flaws" and cites a number of references that have "exposed" the same and confirms "the existence' and 'utility'" of cold fusion (Appeal Brief, pp. 34-39, paragraphs 91-101) . The appellant argues that the Office relies on publications "which now have been shown to have major errors" by peer-reviewed publications (Emphasis original.) (Appeal Brief, p. 34, paragraph 91). In support of his position, the appellant cites to an article by Fleischmann and Pons responding to criticism of their work ("Response to Critique of Physics Letters A Paper," Cold Fusion Times, Vol. 1, issue 3 (1993)) as well as other articles by Noninski ('91, '91B, '93), Mallove '91, Miles '94B and Milton '96.

The Fleischmann and Pons reference critiques an analysis by Douglas R. O. Morrison, a cold fusion skeptic, whose views have been previously discussed (Decision, pp. 26-27 and footnote 11) To the extent that it portends to answer Mr. Morrison~ s analysis, the article offers only another opinion concerning cold fusion and not a definitive opinion.

The excerpts of the Noninski references before us are not as conclusive as appellant portrays them to be. Each one cautions their conclusion by stating that no explanation for the excess heat has been found so far (Noninski '91, p. 163) . The conclusion espoused is merely a different one that could be drawn (Noninski '91B, p. 579) or the conclusion is based on experimentation which is insufficient to prove that excess heat in all experiments "is real" (Noninski '93, p. 476). The Miles 94B reference acknowledges that the discussed research efforts were limited due to the lack of reproducibility of their experiments (p. 484) . Note also that these experiments were the subject of the Jones I evaluation that questioned their adequacy. The Mallove '91 (presumably the excerpt of Fire from Ice) and the Milton '96 references offer only a historical opinion of the events that transpired during the early years of cold fusion development (an apparent counterpoint to Huizenga's publication). However, unlike Huizenga, no scientific evaluation refuting or supporting the existence of cold fusion is provided in the excerpt before us.

These references, when considered as a whole, do not conclusively prove that the criticisms of Pons/Fleischmann experimentation were without merit, nor do they conclusively prove the existence of cold fusion. They merely evidence that the controversy and debate about cold fusion is alive and well within the scientific community.

Appellant refers to other numerous references to support the existence and utility of cold fusion (Appeal Brief, p. 35, paragraph 94) . In particular, the appellant argues that various organizations including the US Navy, NCFI, Los Alamos National Laboratory (no particular reference), EPRI, NASA (Neidra '96A and 9GB) and the French Atomic Energy Agency (Lonchampt '97) agree with the existence of the field of cold fusion.

The references to EPRI, NASA, and Los Alamos appear to center primarily around reports submitted to Cold Fusion Times, Vol. 4, Issue 3. This publication appears to only report activities concerning cold fusion around the world. However, it provides insufficient information for the reader to reach a scientific conclusion on his own. Lonchampt '97 also fails to provide sufficient information from which to verify its conclusions.

Concerning reports by the US Navy, Chambers ("Evidence for MeV Particle Emission From Ti Charged with Low Energy Deuterium Ions," NRL Memorandum Report 6927 (1991)) merely invites other researchers to experiment with low energy bombardment of thin samples to search for low level fusion reactions (p. 19) . Rehn et al.'s report on "The Third International Conference on Cold Fusion . . . ." (1993) to the Office of Naval Research Asian Office acknowledges that "a more concerted theoretical effort is now justified" and that much research must still be done to understand the cold fusion phenomenon (pp. 88-89) . These reports offer no conclusive proof of the existence or the utility of cold fusion.



F. Will's Final Report (National Cold Fusion Institute -1991) is alleged to support the existence of the "cold fusion" phenomenon (Swartz Declaration, paragraph bridging pp. 12-13) See paragraph 98 of the Appeal Brief (p. 37) . It appears that appellant is giving much weight to the fact that substantial amounts of financial resources are being invested in this phenomenon to establish its existence. However, financial support is only an indicator of the interest in the phenomenon and not scientific proof of its existence. It should also be noted that the Final Report is not a scientific evaluation of the theory of cold fusion. It is only a report of alleged evidence of cold fusion which lacks the details necessary for appropriate review by the scientific community. There is no indication that the scientific community as a whole has accepted this evidence. On the contrary, Will acknowledges that the political and financial climate remains generally negative (Will, p. 1-3, second paragraph). Will also places some doubt on the evidence reported in his conclusion by indirectly acknowledging that the alleged ~xcess heat may not be generated by deuterium fusion and that the "possibility that the excess heat is not of nuclear origin can not presently be ruled out" (Will, paragraph bridging pp. 1-16 and 1-17). Contra to appellant's arguments, Will does not confirm the existence of cold fusion, much less address the real problem of reproducible results.

The other various references in paragraphs 95-100 of the Appeal Brief are only casually mentioned by the appellant. For example, Huggins '94 and Kestenbaum appear to be only reports updating the status of cold fusion efforts at different sites. The reports from the various conferences also offer updates on activities related to cold fusion. (Again, note Douglas R. O. Morrison's report on ICCF-6 for a skeptic's views of such activities.)

Storms '94C attempts to eliminate the reproducibility of the Pons-Fleischmann Effect as an issue (Conclusions, p. 99) However, it is evident that reproducibility still remains a controversial topic in cold fusion as late as 1997 (Morrison ICCF-6 report)

Sawatimova '94 discusses experiments involving cathode materials before and after irradiation by deuteron ions (p. 389) . A result of the experimentation is the discovery that the concentration of impurities increased and among those impurities were elements which "cannot be found in the discharge environment" (Abstract, p. 389) . However, the paper stops short of concluding that these elements were the result of a fusion-fission reaction. It only posits the possibility that such a reaction could explain them (Abstract, p. 389)

The appellant lists a number of references, some before and some after the filing date of this application, and declarations to establish the existence of cold fusion (Appeal Brief, pp. 42-46, paragraphs 111-119) . While there is much activity dedicated to the study of this phenomenon, there is little conclusive evidence of its utility. The list of references cited by appellant reports experimental studies that present results that ~ indicate the presence of the phenomenon. However, this is insufficient to establish utility and enablement within the meaning of the relevant sections of the statute.

Appellant argues that Taubes is "wrong and scurrilous" and "has **NOTHING TO DO** with the original specification" (Emphasis original.) (Appeal Brief, pp. 46-47, paragraph 120). The Examiner's reliance on Taubes is brief and limited to further support his contention that cold fusion is still not accepted by the scientific community (Examiner's Answer, p. 7). Appellant's reliance on publications by Miles '92 and Hoffman '94 which criticize Taubes and his book merely underscore the controversy that exists in the scientific community concerning this phenomenon.

Appellant argues that Jones (presumably Jones I and II) are irrelevant and erroneous (Appeal Brief, pp. 47-48, paragraph 121) . Appellant's argument is unclear because it only mentions that Jones' articles contain errors without specifically addressing them. Once more, he relies on publications by scientists that appear to be favorable to the phenomenon to support his alleged contentions. The fact that there may be some disagreement with the methodology of the analysis by Jones again underscores the controversy surrounding the cold fusion phenomenon. Thus, it may be only a matter of a difference of opinion.

Appellant also argues that the Office's reliance on Morrison is misplaced because he "is not believed by serious wellcredentialled [sic]' scientists in the field of cold fusion" (Appeal Brief, p. 48, paragraph 122) . The Morrison Report, as indicated previously, details the events that transpired at the

Sixth Cold Fusion Conference. This Report refers to a number of presentations provided before an audience of scientists receptive to the concept of cold fusion. In addition, this Report balances the reference to those presentations by pointing out the general acknowledgment by some presenters that there is still a lack of reproducibility (p. 2, Section 2.1; p. 4, second full paragraph;

p. 6, Section 5.1, item d; p. 8, first paragraph of Section 7) and that no evidence in favor of cold fusion was presented (p. 12, Section 13)

Appellant argues that the lack of any observation of large numbers of neutrons, as supported by the examiner's various references, does not negate "anything at all." See the Appeal Brief, pp. 52-53, paragraphs 127-129. The appellant supports this contention by relying on Shani, who is said to allegedly have monitored "stimulated neutron radiation from deuterated materials after said deuterated materials were neutronirradiated" and on Faller as reporting tritium increase (Appeal Brief, pp. 52-53, paragraph 129).

Shani appears to be another scientific evaluation of the Pons/Fleischmann experiment that does not portend to be a decisive analysis of the Pons/Fleischmann experiment. In fact, it is unclear whether the study may have been done with entirely different equipment (Shani, p. 53). Further, Shani carefully couches his conclusions by stating that the fusion reaction is a possibility and meant to be relevant to interpret the experimental observation of the cold fusion process (Shani, page 57). Fallor also couches his conclusion by stating that "[n]o activity was detected that would indicate a sustained fusion reaction had taken place" (Abstract, p. 9) and that the "production of excess tritium . . . can be explained by processes other than fusion" (Summary, p. 15).

The appellant argues that Myers is not applicable because it employed detectors that were not proper for monitoring "these types of reactions" (Appeal Brief, p. 56, paragraph 134) and involved inadequate loading of deuterons and inadequate monitoring of the loading of the deuteron (Appeal Brief, pp. 56-57, paragraphs 135-136) and was "too short" (Appeal Brief, p. 57, paragraph 137).

We now proceed to address appellant's significant arguments concerning the examiner's rejection under 35 U.S.C. § 112, first paragraph, as presented in the first Reply Brief (Paper No. 29) In this document, the appellant presents a number of issues that do not fall under the jurisdiction of this Board and a number of issues that merely restate the appellant's positions addressed

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above. To the extent that the arguments are restated, we consider them to have been appropriately addressed above. However, the appellant presents new arguments concerning the Miller Memo which merit further comment.

Appellant argues that the Miller Memo is irrelevant and that the Office does not account for Miller's call for peer review (Reply Brief, paragraph 42) . This reference was cited by the Examiner to indicate that "there is still no concrete evidence of excess heat" (Examiner's Answer, Paper No. 30, p. 8) . We find this statement to be accurate (pp. 6-7 of the Memo). The Memo essentially reflects the controversy that still exists in the scientific community with respect to the phenomenon of cold fusion.

We have also reviewed the Second Reply Brief filed August 3, 1998 (Paper No. 31) . This communication again restates arguments previously presented by the appeal brief and the first Reply Brief (Paper No. 29) . We consider those arguments that pertain to the appeal before this Board as fully responded to above.

In light of the foregoing and after careful consideration of the entire record, for the reasons set forth in the Examiner's Answer, we sustain the rejections of the appealed claims under 35 U.S.C. § 101 and 35 U.S.C. § 112, first paragraph, enablement requirement.

THE REJECTIONS UNDER 35 U.S.C. § 103

In considering the examiner's rejection of the appealed claims for obviousness (35 U.S.C. § 103), we are guided by the fundamental tenet of patent law that references relied upon to support a rejection under 35 U.S.C. § 103 must provide an enabling disclosure, i.e., they must place the claimed invention in the public's possession. In re Payne, 606 F.2d 303, 314, 203 USPQ 245, 255 (CCPA 1979). An invention is not possessed absent some known or obvious way to make it. Id.

Here, the technology involved is one based principally on the work of and publication of Pons/Fleischmann which has been substantially discredited by the attempts of those skilled in the art to duplicate the results of their work. Clearly, based on the record before us, the references to Pons et al. and Fleischmann et al. cannot be relied upon as enabling prior art references to support the examiner's obviousness rejection in this appeal. Accordingly, we cannot sustain the examiner's rejections under 35 U.S.C. § 103.



SUMMARY

The examiner's rejection of the appealed claims under 35 U.S.C. § 101 and 35 U.S.C. § 112 is affirmed. The examiner's rejection of the appealed claims under § 103 of the statute is reversed. The decision of the examiner, accordingly, is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)

ANDREW H. METZ  
Administrative Patent Judge

Administrative Patent Judge

ROMULO H. DELMENDO  
Administrative Patent Judge  
BOARD OF PATENT APPEALS AND INTERFERENCES  
AFFIRMED  
**AHM:** hh

**BOARD OF PATENT APPEALS AND INTERFERENCES  
FOR THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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Inventor : Mitchell R. Swartz  
Serial No.: 08-406,457  
Filed: 3/20/1995

Group Art Unit: 2204

Examiner: Daniel Wasil

For: **APPARATUS TO DETERMINE  
THE ACTIVITY OF A SAMPLE  
LOADED WITH ISOTOPIC FUEL**

August 15, 2001

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**APPEAL FROM THE UNITED STATES PATENT OFFICE**

**Appeal No. 98-2593**

Examiner Daniel Wasil    Group Art Unit: 2200

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Dr. Mitchell Swartz, *pro se*, as Appellant

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**Request For Reconsideration  
Or Modification Of Decision Pursuant To 1.197**

# TABLE OF CONTENTS

## Request for Reconsideration or Modification of Decision Pursuant to 1.197

Reasons for Request for Reconsideration or Modification	Page
The Decision Is Inconsistent With Present Standards	2
Concise Statement Of The Material Facts	3
Errors In The Decision Described With Specificity	5
The Decision Ignores That The Present Invention Measures Activity	6
The Decision Ignores Verified Declarations Demonstrate Operability	7
The Decision Ignores Declarations Support Utility	8
Decision ignores That Operability and Enablement Demonstrated BY Peer-reviewed Publication	9
More Errors In The Decision Described With Specificity	10
The Truth: The Original Specification and Claims DID Discuss Temperature	10
The Truth: The Original Specification and Claims DID Discuss Voltage	10
The Truth: The Original Specification and Claims DID Discuss Exact Material	11
The Truth: The Original Specification and Claims DID Discuss Pressure	11
The Truth: The Original Specification and Claims DID Discuss Noise Measurement	11
The Truth: The Original Specification and Claims DID Discuss Loading	11
The Truth: The Original Specification and Claims DID Discuss The Relevant Parameter	11
The Truth: The Original Specification and Claims Discuss the Relevant Parameter	12
The Truth: The Decision Ignores The Invention	12
Additional Error: The Decision Again Egregiously Ignores That Submitted Documents Are "Missing"	13
Decision Ignores Applicant's Three Submitted Videos and Does Not List Them	15
Additional Error: The Decision Ignores That The Office's Witnesses Have "Turned"	16
Summary	17
Conclusion	19
Addendum	
Table 1	
Exhibits 1-9	
Exhibit 10	
Declaration of Dr. Scott Chubb	
Declaration of Dr. Michael Schaffer	
Declaration of Dr. Hal Fox	
Declaration of Dr. Eugene F. Mallove	
Declaration of Jed Rothwell	

1. The Appellant received a Decision on Appeal from the Board stamped July 27, 2001 (hereinafter called "Decision"). The examiner's rejections of the appealed claims under 35 U.S.C. §101 and 35 U.S.C. §112, first paragraph, were affirmed. The examiner's rejection of some of the appealed claims under Section 103 of the statute was reversed. This request is filed within one month from the date of the original decision.

2. Pursuant to 1.196(b)(2), the Appellant is respectfully asking to have the affirmation of the examiner's rejections of the appealed claims under 35 U.S.C. §101 and 35 U.S.C. §112 reconsidered or modified by this single Request for Reconsideration or Modification of Decision under 1.197(b) by the Board of Patent Appeals and Interferences based upon the same record, Declarations referred to in the Appeal and Reply Briefs. Decisively proving the Appellant's points (infra) are ten (10) Exhibits bearing the datestamp of the Office, summarized by a Table 1 (attached with the Exhibits hereto) and Declarations from several individuals including those cited by the Decision out-of-context and incorrectly. These Declarants dispute the erroneous Decision, including what said Decision falsely purports two of them to have said.

### **Reasons For Request For Reconsideration Or Modification**

#### **The Decision Is Inconsistent With Present Standards**

3. The Appellant respectfully submits this Request for Reconsideration for several reasons. In this case, there are several material matters of facts and points of law overlooked or misapprehended by the panel of the Court. Briefly, the Decision rejects the reasoning of many present standards, does not address most of the Declarations by those skilled-in-the-art, and solely responds to art cut of cloth made of other than the present invention, original specification and claims.

A. First, the Decision is factually wrong as the Decision's statements are directly contradicted by substantive evidence already in the record including unrebutted Declarations and over 140 pounds of exhibits which fully addressed all matters criticized by the Office. These have probative value. Nothing has been presented which differs or rebuts the Declarations.

- i. The Decision rejects the reasoning of Ex parte Porter because the Decision is inconsistent with unrebutted Declarations which did fully address all matters criticized by the Office and which were supplied in the expectation that they would be read, examined, and carefully considered.
- ii. The Decision rejects the reasoning of Ex parte Gray [10 USPQ2d 1922, 1928 (Bd. Pat. App. & Inter. 1989)] because there was solid evidence of operability and utility, beyond the detailed specification, in the form of corroboratory expert testimony including said unrebutted Declarations.
- iii. The Decision rejects the reasoning of In re Morris [127 F.3d 1048, 1053-56, 44 USPQ2d 1023, 1027-30 (Fed. Cir. 1997)] because the interpretation of operability and utility is predicated upon that which one who is skilled-in-the-art would reach.

- iv. The Decision is void of any discussion of several of the un rebutted Declarations, and is flawed by omitting exactly why the un rebutted Declarants have not been addressed.
- v. As a result, it cannot be determined from the record which - if any - of these submitted un rebutted documents regarding definiteness have been formally considered by the Court.
- vi. There is Obligation by the Office and Board to assume that Petitioner's Declarants' un rebutted assertions --made before the Appeal-- are true [Lewis v. Bours, 119 Wn.2d 667, 670, 1992].

B. Second, the Decision is flawed because the PTO has relied mainly upon reference to art cut of a cloth other than this specification and claims. None of the Decision of Board (28 pages) pertains to the present invention.

- i. The Decision rejects the reasoning of In re Prater [415 F.2d 1393, 162 USPQ 541 (CCPA 1969)] because in this case the pending claims must be given the broadest reasonable interpretation consistent with the specification. It is not fair for the PTO to weave systematic misstatements using cloth cut of other art.
- ii. The Decision rejects the reasoning of In re Zletz [893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989)] because the specification clearly and explicitly stated the meaning of the terms in the claims which means that the invention is a method to measure activity.
- iii. One can reasonably assume the Board has presented its fabrications "tongue-in-cheek". If the Board must rely upon reference to art cut of a cloth other than this specification and claims, then their position must indeed be rather weak. This failure to address the present invention, and lack of serious argument, dictates allowance of the present invention.

C. Third, the Decision is not consistent with code, statute, case law, Office rules, and The United States Constitution as it rejects the reasoning of numerous other Decisions of controlling authority.

- i. The Decision is flawed because it rejects the reasoning of The United States Constitution [Clause 8 of Section 8, Article I] by improperly eliminating an entire field involving energy and United States security.
- ii. The Decision is flawed because it rejects the reasoning of The United States Constitution [14th Amendment] that Appellant is entitled to an impartial tribunal [28 U.S. Code Section 144, Mayberry v. Penna., 91 S.8.; Bloom v. Illinois, 88 Ct. 499 S.Ct. 1477; Duncan v. Louisiana, 88 S.Ct.1444] and equal protection of the laws. Ignoring un rebutted Declarations and due process patently violates the 14th Amendment's "equal protection" clause [Frontiero v. Richardson, 93 S.Ct. 1736, 411 U.S. 677; Weiss v. Weiss, 436 N.Y.S. 2d. 862, 52 N.Y. 2d. 170 (1981)] with serious implications [Gass v. Lopez, 95 S. Ct 729; Wood v. Strickland, 95 S Ct 9S2; U.S. v. Price, 86 S Ct 1152, 1157, Footnote 7; Griffin v. Breckenridge, 91 S Ct 179D; Gamez v. Toledo, 42 U.S.C. §1983, and Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics].
- iii. The Decision rejects the reasoning of the Supreme Court that a *pro se* litigant is entitled to less stringent standards [U.S. Rep, 404, 520-521 (1972)].

4. The original specification and claims 13-14, 21-22, and 24-39 (all claims) taught the subject matter defined by each of the rejected claims, set forth the best mode contemplated, and did distinctly point out and claim the subject matter which constitutes the invention. This was corroborated by unrebutted declarations, and supported by a peer-reviewed publication of additional probative reference. These Declarations and Exhibit corroborate the Appellant, and prove, that operability and utility were taught in the original specification and claims. The present invention has operability and utility based upon the record, and has been validated based upon Exhibits and, more importantly, Declarations in the record - which remain ignored. The original specification and claims complied and conformed with the Patent Act.

5. Pursuant to 1.197(b), this request for reconsideration states with particularity the points of law and facts which the Board has overlooked or misapprehended using substantive argument and hard evidence -- already in the record.

### Concise Statement Of The Material Facts

6. The invention at issue in this case, generally speaking, is a method to "examine the activity of a sample of a material involved in a reaction with an isotopic fuel". Here, activity is defined as the ratio of the output heat power observed to the electrical input power delivered. Activity measures how efficient is a sample of material, loaded with an isotope of hydrogen, in its capacity to produce heat. The invention accurately and precisely, with calibration for system noise, measures the activity. The samples are nickel or palladium which can internally fill ("load electrochemically") with hydrogen, such as a sponge fills with water. The original specification of the above entitled application taught the use of a novel holding apparatus and method to assess the activity of a sample. The method solves a long-standing problem of accurately measuring activity of a material (or electrode).

7. Claim 13, thoroughly ignored in the Decision, describes **"a method to determine the optimum electrical drive condition for said sample and thereby characterize said sample"**.

- i. As the claim 13 states this is done, first by **"holding said sample into a calorimeter containing more than two rings with barriers between said rings"**. The multi-ring calorimeter was described by Figures 3 and Table 1 in the original specification as discussed including on page 17, lines 2-12. FIGURE 3 (in the original specification) is a simplified two-dimensional diagram of a five-ring calorimeter, one preferred embodiment of the present invention.
- ii. Then as claim 13 states, the calorimeter has means for **"filling with liquid the volume between each said ring"**.

- iii. Then as claim 13 states, means are made for supplying hydrogen by **"loading into said material ... by means of a power supply and electrical circuit"**. This is discussed in the original specification including on page 16, lines 11-14, and in cited and supplied prior art whose dates preceded the application [Swartz (1992), Swartz (1993), Swartz (1994)].
- iv. Then as claim 13 states, means are made for **"thermally monitoring said liquid in each said ring"**. This is discussed in the original specification including on page 18, line 3 through page 19, line 3, and also page 10, lines 14-18.
- v. Then as claim 13 states, means are made for **"deriving the thermal response of said sample by computational means including accounting for the mass and temperature distribution of at least one barrier between said rings"**. This is discussed in the original specification on page 22, lines 3-11 and line 18 through page 23, line 14, also page 23, lines 21 through page 24, line 6, and lines 14-17, and page 25, lines 4-11.
- vi. Then as claim 13 states, means are made for **"increasing through a series of at least three incremental steps the electric power drive conditions of said electrical circuit"** followed by means for **"deriving for each said step data consisting of the thermal output relationship of said sample as function of said drive steps, thereby deriving an optimum drive condition of said sample"**. This is discussed in the original specification including on page 15, lines 15-20, and page 23, lines 14-17, and in FIGURE 4 (in the original specification) which is a graph showing the actual output of the apparatus. Furthermore, FIGURE 5 (in the original specification) shows the V-I (voltage current) characteristics and power amplification (labels 503, 510, 519, 520, 504, 521). FIGURE 6 shows the output (labels 701, 702) and ohmic controls (label 700) as a function of the transsample voltage.

8. The original specification and claims 13-14, 21-22, and 24-39 (all pending claims) complied and conformed with the Patent Act by teaching the subject matter defined by each of the rejected claims, including the best mode contemplated. It distinctly points out and claims the subject matter which constitutes the invention. The equations conform to well-known physics.

9. Many Declarations showing utility and operability were submitted to the Office (and --with the other documents (infra) supplied [Exhibits 1 through 9, summarized in Table 1]) to counter false statements by the Office. These include the Declaration of Dr. Mitchell Swartz (hereinafter called the "Swartz Declaration") dated September 16, 1997, the Declaration of Hal Fox (called the "Fox declaration"), dated May 16, 1995; the Declaration of Dr. Eugene F. Mallove, (hereinafter called the "Mallove Declaration"), dated February 6, 1994; the Declaration of Ms. Gayle Verner (hereinafter called the "Verner Declaration") dated September 16, 1997; the Declaration of Dana Rotegard (hereinafter called the "Rotegard Declaration") dated May 15, 1994; the Declaration of Dr. Robert Bass (called "Bass Declaration") dated April 17, 1996; and the Swartz Declaration with testimony from Drs. Melvin Miles, Brian Ahern and Ray Kurzweil.

These documents were received [For example, Exhibits 5 and 7], transferred to the Board, and for the most part have been systematically ignored, except for two, and they have been ignored regarding their substantial probative content. Of the rest, none of their relevant paragraphs, nor the verified Declarations themselves, are referred to in the Decision regarding the important issues under consideration.

10. Also submitted was a key published peer-reviewed papers authored by the Applicant demonstrating validation as taught in the original specification and claims. This has been ignored by the Board, and a false list of references has been provided by the Board.

11. An Appeal Brief was filed in the above-entitled application on November 8, 1997. The Examiner's Answer was dated May 29, 1998. Because of false statements by the Office, a Reply Brief was filed June 25, 1998. A second Examiner's Answer was mailed July 20, 1998. Because of false statements by the Office, a Second Reply Brief was filed July 29, 1998, discussing the continually removed documents against Federal regulations on pages 1-4.

The case was never "*ex parte*", despite that and other false statements in the Decision. "*ex parte*" is applied inappropriately by those who have elected to obstruct justice and remove documents (*infra*).

12. The Board sustained the rejections of the appealed claims 13, 14, 21, 22 and 24 through 39 under 35 U.S.C. §101 and 35 U.S.C. §112, first paragraph, enablement requirement.

### **Errors In The Decision Described With Specificity**

13. The Decision has many errors of fact and points where it does not comply with the law. The errors are divided into those involving the original specification and claims, errors referring to the record, and errors about an entire scientific investigatory field used by the Board to attempt to impugn the Appellant's efforts and invention rather than deal with the actual claims and specification in the record, specifically regarding operability and utility.



## The Decision Ignores That The Present Invention Measures Activity

*"The preamble of appellant's independent claims 13, 21, and 34 is directed to a process for producing a "product" from a sample of material loaded with an isotopic fuel."*

*"... the record before us in this appeal involves ... attempts ... to duplicate the Pons/Fleischmann results."*

*"... we agree with the examiner that the evidence of record supports a finding that appellant's claims are directed to accomplishing an "unattainable result"*

*".. there is substantial evidence of record that results in the area of "cold fusion" were irreproducible as of the filing date of this application"*

*"Even those workers that have continued to experiment and to believe in the cold fusion process candidly acknowledge that reproducibility remains a problem."*

[Appeal No. 98-2593, July 27, 2001, Application 08-406,457]

## The Truth: The Decision Does Not Discuss Appellant's Technology

14. Nothing in the Decision addresses or discusses the present invention. The Decision only refers to art of cut of cloth not at all made of the original specification and claims. This is salient demonstrated as follows.

Claim 13, thoroughly ignored in the Decision, describes **"a method to determine the optimum electrical drive condition for said sample and thereby characterize said sample"**. The invention is used to "measure activity" which refers to the measurement of heat generation from a sample, as discussed in the original specification and claims including in FIGURES 5, 6, 7. Attention is directed to the salient fact that although the invention is used to "measure activity", that is discussed in the Decision zero (0) times. Similarly, the key features of claim 13 are each absolutely and totally ignored in the egregious Decision.

- i. Claim 13 teaches and claims "thermally monitoring", but the Decision discusses that zero (0) times.
- ii. Claim 13 teaches and claims "electric power drive", but the Decision discusses that zero (0) times.
- iii. Claim 13 teaches and claims "thermal output", but the Decision discusses that zero (0) times.
- iv. Claim 13 teaches and claims "optimum drive condition", but the Decision discusses that zero (0) times.
- v. Claim 13 teaches and claims "multiring calorimeter", but the Decision discusses that zero (0) times.
- vi. By contrast, the Decision discusses "Huizenga" (on reference to other book) thirteen (13) times.
- vii. By contrast, the Decision discusses "Morrison" (on reference to other art and pro-Aryan {?Hate Crime} claims) eleven (11) times.
- viii. By contrast, ignoring the present invention and claims, the Decision elects to only focus on "cold fusion" which it mentions eighty-six (86) times.

15. The Decision by the Board is solely based upon the work and activities of others -- and not the original specification and claims (*supra*, *infra*). This failure to apply the normal standard of review has not only the appearance of impropriety by the Board, but is hollow and baseless and without argument because it ignores both the entire original specification and claims and the submitted, and received, Declarations and Exhibits.

The Board had Obligation that the claimed invention must be the focus of the Decision. Therefore, the Decision is improper and unethical because it must depend upon what appellant meant [*In re Morris*]. The original specification and claims clearly indicate that what appellant invented and intends to be encompassed by the claims directly involves measurement of activity of a sample.

- i. The Decision appears to have inadvertently leaked that the Board was aware of the Truth in this because in the Decision the Board admits that "*Appellant states in his Specification that "it is a principal object of the present invention to provide a novel method and system to examine a material for activity concerning the desired reactions" (Specification, p. 7)."* There is no further discussion by the Board about the actual invention.
- ii. This is also confirmed in the Decision where the Board admits that "*Appellant further states that "[a]nother object of the present invention is to provide a novel method to detect specific materials which demonstrate the activity required for ... these reactions" Id".* There is no further discussion by the Board about the actual invention.

### The Decision Ignores Verified Declarations Demonstrate Operability

16. The record contains Declarations [cited in Appellant's Brief] from Declarants of probative value, persons skilled in the art. Said Declarations were received by the Office and have been systematically ignored.

- i. The un rebutted Declarations were specifically provided to the Office as evidence supporting the Appellant's position. They contain averments regarding evidence establishing the utility, validation, and operability of the Appellant's claimed subject matter. The Declarations rebut and refute the Office's [and the "rubber-stamped" Decision's] unsupported statements, misstatements, improper and illogical assumptions, and erroneous conclusion. [By contrast, the Board continues to cite non-science reporters, ancient sources, and incredible sources (*infra*).]
- ii. Appellant's Declarations were received -- which is confirmed, for example, by Exhibits 5 and 7]. Nonetheless, the Board (and Office) has failed to respond. Said Declarations have not been rebutted, and remain undiscussed and ignored with respect to their factual matter regarding operability. The Declarations remain ignored in their factual, substantive and engineering content because they absolutely, accurately, and precisely refute the Decision's statements and erroneous position on the issues of operability and utility. The Declarations confirm operability by referring to the actual original specification and claims which demonstrate

that the invention works. \*\*\*\* 1 Therefore, the Decision rejects the reasoning of other Appeals Court in Marino v. Hyatt Corporation, 793 F.2d 427, 430 (1st Cir. 1986), Morrill v. Tong, 390 Mass. 1207 129 (1983), Chelebda v. H.E. Fortuna & Brothers Inc. 609 F.2d 1022 (1st Cir. 1979) by ignoring the unrebutted Declarations despite being Obligated by law to assume that the unrebutted Declarations are true [Lewis v. Bours, 119 Wn.2d 667, 670, 1992].

### The Decision Ignores Declarations Support Utility

17. Utility is a fact question [Raytheon Company V. Roper Corporation, U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592], and therefore Declarations were supplied which demonstrated proof of utility. Because proof of utility is sufficient if it is convincing to one of ordinary skill in the art [In re Irons, 52 CCPA 938, 340 F.2d 974, 144 USPQ 351 (1965)], the Declarations of Dana Rotegard, Mr. Fox, Dr. Swartz, Dr. Mallove, and the letters of Dr. Kurzweil and Dr. Ahern, were submitted including on March 12, 1997, and June 28, 1997. Applicant discussed said Declarations in the Response to the Examiner.

Said Declarations remain ignored in the their factual content because they refute the Offices' erroneous position. Said Declarations prove that the present claimed invention measures activity and meets at least one stated objective, and therefore utility under 101 is clearly shown [Standard Oil Co. (Indiana) v. Montedison, S.P.A., 664 F.2d 356, 375, 212 USPQ 327, 344 (3rd Cir. 1981), cert. denied, 456 U.S. 915, 102 S.Ct. 1769, 72 L.Ed.2d 174 (1982); E.I. du Pont de Nemours & Co. v. Berkley & Co., 620 F.2d 1247, 1258 n. 10, 1260 n. 17, 205 USPQ 1, 8 n. 10, 10 n. 17 (8th Cir.1980); Krantz and Croix v. Olin, 148 USPQ 659, 661-62 (CCPA 1966); Chisum on Patents, 4.04[4] [1983]; Raytheon Company V. Roper Corporation, U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592].

Corroborating the Declarations are many Exhibits. The Board took a quote from a document it had, but the Board most importantly omitted the more relevant statement by Dr. Michael **Mckubre**, the **world-famous** calorimetrist who stated regarding his observations at the international conference in

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\*\*\*\* 1 Given the large amount of solid evidence in the record, and the history of the Office losing documents, to avoid the appearance of impropriety, the Board should indicate which, if any, of the averments (or pages) in the other Declarations have been formally considered and, if so, how they reached their conclusion.

Vancouver CA, and in the very reference which the Board misquoted [*Infinite Energy*, volume 4, issue 20 (1998)]. Dr. McKubre stated:

**"For me ... perhaps the best report at this conference, was that of Mitch Swartz. ... I have always felt that the quality of the calorimetric observations in the nickel light water studies has been less than the quality of the calorimetric observations in the palladium-deuterium system. ... Mitch Swartz presented a very clear piece of calorimetric evidence which is certainly going to cause me to reconsider my belief and understanding of the nickel-light water system and its capacity to produce anomalous heat" [Dr. Michael McKubre, SRI, at his closing "Summary During ICCF-7", *Infinite Energy*, 4, 20, pp. 34-35, (1998)]**

Validation occurs when scientists skilled in the state of the art states it is so. In the international community, Dr. McKubre is among the most highly regarded of those skilled in the art.

### **Decision Ignores That Operability And Enablement Demonstrated By Peer-Reviewed Publication**

18. Despite the Decisions segue away from the present invention, enablement must be judged on the original specification and claims. In this case, the Appellant has published his invention for measurement of activity in a peer-reviewed journal run by the American Nuclear Society [Exhibit 10, Swartz, M., 1997, "Consistency of the Biphasic Nature of Excess Enthalpy in Solid State Anomalous Phenomena with the Quasi-1-Dimensional Model of Isotope Loading into a Material" *Fusion Technology*, 31, 63-74, \*\*\*\* 2 ]. This publication, and the successive peer-reviewed articles (also ignored by the Office and Board) proves Appellant was correct, and the invention was correctly taught in the original specification and claims on the filing date of the application [In re Hogan, 559 F.2d 595, 60S, 194 USPQ 527, 537 (CCPA 1977)].

19. Appellant submitted a copy of said publication as evidence to the Office and the Board; and although both received it, both conveniently have ignored it because it demonstrates validation, operability, and utility as taught in the original specification and claims. Egregiously, despite that the un rebutted peer-reviewed paper was received by the Board, and was discussed in the Appeal Brief on

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\*\*\*\* 2 Also, "Codeposition Of Palladium And Deuterium", *Fusion Technology*, 32, 126-130 (1997); Swartz, M, 1998, "Optimal Operating Point Characteristics of Nickel Light Water Experiments", "*Proceedings of ICCF-7*", and Swartz, M, 1998, Improved Electrolytic Reactor Performance Using pi-Notch System Operation and Gold Anodes, *Transactions of the American Nuclear Association*, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85. -- Confer Exhibit 9 to show that the Board received these, too.

pages 20-24, and 29-39, the Board corruptly erased it from the list of references. The Board should have honestly listed this paper [Exhibit 10, submitted and received more than a dozen times], but that would have required the Board to specifically indicate how it was formally considered and how the Board reached their conclusion.

20. Enablement and validation has been shown by peer-reviewed publication [Swartz. M., 1997, *Fusion Technology*, 31, 63-74]. These teachings are validation because they confirm operability as taught years earlier in the original specification and claims.

### **More Errors In The Decision Described With Specificity**

21. The Decision viciously, odiously, capriciously falsely states

*"there is no disclosure . . . of a specific operative embodiment . . . , including ... temperature"*

[Appeal No. 98-2593, July 27, 2001, Application 08-406,457, pages 25, 26]

#### **The Truth: The Original Specification And Claims Discuss Temperature**

The Decision is untruthful because temperature is discussed repeatedly and completely. The control of temperature is discussed in the original specification, including on page 18, line 3 through page 19, line 3. Temperature calculations are discussed in the original specification, including on page 22, line 18 through page 23, lines 14, and page 15, lines 15-20. It is egregious that the author of the Decision could so brazenly overlook this.

22. The Decision astonishingly falsely states

*"there is no disclosure . . . of a specific operative embodiment . . . , including ... voltage"*

[Appeal No. 98-2593, July 27, 2001, Application 08-406,457, pages 25, 26]

#### **The Truth: The Original Specification And Claims Discuss Voltage**

The Decision is untruthful because voltage is discussed repeatedly and thoroughly. It is discussed, where current and voltage are linked to power. The computed sampling of voltage is discussed in the original specification, including on page 15, lines 15-20. The exact voltage is discussed on page 26, line 19 through page 27, line 4. Figures 5 explicitly shows the voltage directly. Figures 4, 5, 6 show the voltage indirectly through the power and power gain (which are the more important parameters, as taught). It is egregious that the author of the Decision could again brazenly state this falsehood.

23. The Decision falsely states

*"there is no disclosure . . . of a specific operative embodiment . . . , including exact material"*

[Appeal No. 98-2593, July 27, 2001, Application 08-406,457, pages 25, 26]

#### **The Truth: The Original Specification And Claims Discuss Exact Material**

The Decision is untruthful because the exact material in the multiring calorimeter described to measure sample activity is discussed. Table 1 (Row 1 at the top) explicitly proves the Decision has known fraud written into it, to again systematically cover-up the truth -- this original specification and claims are about a method to measure activity of a sample.

24. The Decision falsely states

*"there is no disclosure . . . of a specific operative embodiment . . . , including ... pressure"*

[Appeal No. 98-2593, July 27, 2001, Application 08-406,457, pages 25, 26]

**The Truth: The Original Specification And Claims Did Discuss Pressure**

The Decision is untruthful because pressure was discussed, with reference to number 132 in Figure 3, including on page 17, lines 18-22.

25. The Decision leads away from the present invention and falsely states

*"there is no disclosure . . . of a specific operative embodiment . . . , including ... purity"*

[Appeal No. 98-2593, July 27, 2001, Application 08-406,457, pages 25, 26]

**The Truth: The Original Specification And Claims Did Discuss Noise Measurement**

The Decision is untruthful because purity of material density does not matter in the present invention which measures activity. If the Board actually referred to the original specification and claims, what is important is a clear assessment of thermal noise in the system. Purity of the signal is what is important and is discussed in the original specification, including on page 10, lines 14-18, page 15, lines 15-20, page 23, lines 14-17, page 24, lines 14-17, and page 25, lines 4-11.

26. The Decision leads away from the present invention and falsely states

*"there is no disclosure . . . of a specific operative embodiment . . . , including ... isotope ratios (e.g., D/Pd)"*

[Appeal No. 98-2593, July 27, 2001, Application 08-406,457, pages 25, 26]

**The Truth: The Original Specification And Claims Did Discuss Loading**

The Decision is untruthful because isotope ratios and loading was discussed in the original specification, including discussion of the Q1D continuum loading model on page 16, lines 11-14, and with reference to the peer-reviewed references [Swartz (1992), Swartz (1993), Swartz (1994)].

27. The Decision leads away from the present invention and falsely states

*"there is no disclosure . . . of a specific operative embodiment . . . , including ... density"*

[Appeal No. 98-2593, July 27, 2001, Application 08-406,457, pages 25, 26]

**The Truth: The Original Specification And Claims Did Discuss The Relevant Parameter**

The Decision is untruthful because density does not matter in the present invention. What is important is temperature, mass, and thermal capacity as discussed in the original specification, including on page 22, lines 3-11.

28. The Decision leads away from the present invention and falsely states

*"there is no disclosure . . . of a specific operative embodiment . . . , including ... electrode size"*

[Appeal No. 98-2593, July 27, 2001, Application 08-406,457, pages 25, 26]

### **The Truth: The Original Specification And Claims Discuss The Relevant Parameter**

The Decision is untruthful because size (as it is relevant to multiring calorimetry) is discussed. The important engineering parameters are the specific heat ( $C_{Z12}$ ), mass ( $M_{Z12}$ ), and effective thermal admittance [ $Y_{12}$ ]. These are discussed in the original specification, including on page 24, line 6, page 17, lines 2-12, page 17, lines 2-12, and especially in Figure 1, Figure 4, and Table 1 (Row 7, which lists the dimensions in millimeters). From beginning to end, the Decision ignores the original specification and claims systematically putting fraud onto a Federal document and corroding the Public's opinion of the Board's propriety.

29. The Decision ignores the actual invention -- a method to measure activity of sample-- and states

*"we find that appellant has failed to demonstrate that as of the filing date of the present application, cold fusion processes could be reproducibly carried out"*

[Appeal No. 98-2593, July 27, 2001, Application 08-406,457]

### **The Truth: The Decision Ignores The Invention**

The Decision must be based upon the invention, but the Board hides and consistently leads away from the present invention (supra). Only by such impropriety and lack of the normal standards of review, does the Board ignore the present invention --a method to measure the activity of a sample -- an invention that obviously has utility and operability. Applicant mentioned other uses, which include the measurement of activity of a sample. Cold fusion was not mentioned in many places such as the Abstract and claims, but was cited as a reference for possible use. Applicant noted that the invention's ability to measure activity might involve a sample which does not show cold fusion.

Furthermore, since the invention as correctly taught in the original specification and claims measures heat, therefore it is a measurement and --like the measurement of "lift" for an aerofoil (wing) or weight of an object-- it has great utility to any honest Judge just as it has utility for any person. The Decision has ignored that operability, enablement, and utility depend upon the invention, as taught in the original specification and claims (including the figures). The Board has acted as if blind, and has pointed

to cold fusion as if it were a forbidden word or religion, whereas it is simply one of several environments in which the present invention finds utility.

### **The Decision Again Egregiously Ignores That Documents Are Missing**

30. The relevant peer-reviewed article demonstrating enablement [Swartz. M., 1997, *Fusion Technology*, 31, 63-74; Exhibit 10] was sent to the office many times. This includes prior to its publication when the original specification and claims were filed. The paper proves that the teachings in the original specification and claims were correct at the time of the filing.

- i. Applicant has provided the Office (and Appellant later supplied the Board) with this sterling reference eleven times. Copies were sent and received including on or about March 15, 1995, March 12, 1997, March 26, 1997. Additional copies (a total of eleven copies with this application) were then sent to the Board. A copy of the key paper was included with each Brief (in triplicate), including on or about November 8, 1997, and June 25, 1998.
- ii. Said paper multiply-submitted, did accompany more than 300 exhibits also "lost, was listed on Forms PTO-1440 as appropriate.
- iii. In some of the submissions Petition was made pursuant to 37 CFR 1.97(d)(1)(ii), and Certificate was filed pursuant to 37CFR 1.97(d)(1)(e), when appropriate.

31. Receipt by the Office, and then Board, of more than a dozen copies of key document proving Appellant was correct at the time of submission of the original specification and claims [Table 1] leaves a palpable record demanding investigation and oversight.

- i. Receipt of said article is documented [Exhibits 1-9, summarized in Table 1] by the integrity of the datestamps and post office of the Patent Office.
- ii. Corroborating the date stamps showing receipt, and the letters showing receipt, and the discussions in the Responses and Appeal Briefs, the Board admits that the other materials supplied apparently did reach the Office. The Board inadvertently admits it received material "attached to Declaration of Dr. Mitchell Swartz Supporting Appeal Brief." (Paper No. 25)" [on or about page 21 of said Decision].
- iii. Examination of Exhibits 1-9 (and Table 1) demonstrates that this Declaration was attached to the other Appendix which contained the sixth through eighth replacements of the document.

32. The key publication, said article [Swartz. M., 1997, *Fusion Technology*, 31, 63-74] is not listed or mentioned in the Decision even though it is on several Forms 1440 of the record, and was discussed copiously in the Responses to the Examiner [pages 50 and 51 of the 3/12/97 Response, Pages 2 and 3 in the 5/26/97 Response, for example], and even in the Appeal Brief [including on pages 47 and 57]. Despite that more than ten (10) copies of the key document showing enablement existed at the time of the original filing, and despite that the document was discussed in the record, eleven copies of the key document have simply been ignored, remain un rebutted and are now conveniently "lost".



Like scores of other documents [including those shown in photographs and Exhibits of United States Court Of Appeals For The Federal Circuit cases 00-1107 (Serial No. 07/371,937) and 00-1108 (Serial No. 07/760,970) which the Board cites], the key paper has repeatedly mysteriously disappeared or has been otherwise "lost".

33. According to Examiner Wasil, the first copy of the paper was "missing". On March 12, 1997, Applicant replaced it (with a copy of the final published paper), discussed it in the Response to the Examiner [pages 50 and 51], and included it on Form 1440.

- i. On May 26, 1997, Applicant replaced it again with another a copy of the final published paper), discussed it in the Response to the Examiner [pages 2 and 3], and included it on Form 1440.
- ii. On November 8, 1997, Appellant (previously Applicant) sent further copies to the Board, and discussed it in the Appeal Brief [including on pages 47 and 57].
- iii. Appellant discussed by letter to Examiner Wasil the injustice of the latest missing copy.
- iv. On June 25, 1998, Applicant sent the eighth, ninth, and tenth copies of the final published paper to the Board, with a copy in each copy of the Reply Brief.

34. This was brought to the attention of the Board, including Judge Metz.

- i. The Board, for the third time in as many years, has again ignored the fact that portions of Appellant's file, relevant to the case, were deliberately removed.
- ii. This is a grave matter --systematically ignored by the Board.
- iii. It apparently does not matter how many times the Office is informed of this, or how many Declarations or Exhibits are given demonstrating the Office is wrong, or how many times altered data is shown to the Office -- someone in the Office is either "asleep at the wheel", "looking the other way", and/or otherwise violating Federal law. The Board has systematically ignored --and by its behavior and lack of uniform application of the normal standards of review thus encouraged-- destruction of documents in noncompliance with Federal law.

### **Decision Ignores Applicant's Three Videos And Doesn't List Them**

35. The Decision ignores the actual invention -- a method to measure activity of sample-- and states

*"The appellant also refers to documentaries by the CBC and BBC which "meticulously researched and reported the truth surrounding cold fusion" (Appeal Brief, p. 32, paragraph 88) ...These references may only serve as a measure of the pulse of the scientific community "*

[Appeal No. 98-2593, July 27, 2001, Application 08-406,457]

First, ignored by the Board are the videos, even though the Office video (older, less accurate) is discussed in the Decision. The videos were submitted over and over (and were received as documented, for example, by Exhibit 3 which shows the datestamp of the Office), but they are ignored.

The Decision ignores the content of the provided three (3) videos. The documentaries were made by reputable production groups -- the Canadian Broadcasting Company [CBC (1993), CBC (1994)] and the British Broadcasting Company ["Horizons", BBC (1994)]. They have meticulously researched and reported the facts surrounding cold fusion. The ignored videos, cited on the correct forms and received by the Board [e.g. Exhibits 3], presented scores of individuals in the scientific community who have contributed to the latter documentaries, and by doing so, declare the Decision to be inaccurate on these matters. The latter tapes were supplied on or about including May 26, 1997 [Exhibit 3] and on November 8, 1997 discussed on page 32 of the Appeal Brief. These substantive submissions in rebuttal to the Office's dependence upon an older less accurate video have also been ignored in the Decision with respect to their content. This myopic censorship by the Board is consistent with the Decision ignoring the relevant portions of the un rebutted Declarations, and the key publication demonstrating enablement at the time the original specification and claims were filed.

Second, attention is directed to the fact that the Decision does not even list Applicant's three videos. Another omission consistent with the missing Exhibits and Declarations.

Third, the Decision admits above that the measurement of activity in this field must have utility. There are so many people interested, that the Board admits there is a "pulse".

36. This obstruction of justice involving "lost", missing, and/or destroyed Federal documents under the watch of the Office (and now the Board) is confirmed several other ways.

- i. The Appellant has repeatedly asked for a copy of the Office's docket sheet for correction, clarification, and elaboration of this matter after the numbers on the Office's and Applicant's pleadings differed. Appellant has received no answer.
- ii. Exhibits in Federal Appellate Court cases 00-1107 and 00-1108, which the Board cites, have already demonstrated corruption of Federal records and docket of record, with implicit encouragement by the Board. It is odious that in this third case before the Board, that after receipt of so much evidence, that after receipt of more than a dozen copies of the key document, that after Appellant pointed out to the Board that they were NOT DISCUSSING THE INVENTION, that they would act with such salient impropriety, yet again.

### **The Decision Ignores That Office's Witness Have "Turned"**

37. The Decision is inaccurate. It ignores the Office's previous witness, Dr. Rehn, United States Navy, turned on them and said:

**"Perhaps the clearest scientific fact, at this time, is the hardest for physicists to accept: nuclear reactions apparently do occur in deuterium-loaded Pd, Ti, and probably in other solids."**

[Rehn, V., Ahmad, I., "The Third International Conference on Cold Fusion", Scientific Information Bulletin, Office of Naval Research Asian Office, NAVSO P-3580, Vol. 18, Jan. 1993; underline added for emphasis]

38. The Decision ignores the Office's previous witness, Dr. Will, turned on them and said:

**"Significant positive results have been obtained in each of these laboratories. ... Over 100 groups from more than 12 countries have now reported ... " [F. Will; Final Report National Cold Fusion Inst.(1991)]**

39. The Decision ignores the Office's latest witness, Dr. Michael Schaffer (cited in the Exhibit supplied with the Decision) has turned on them and said:

**"I do not see how anyone could construe anything that I wrote at Scientific American's site to imply that there is "no utility" in cold fusion, much less in instruments that might be used in cold fusion and other scientific experiments."**

**"It appears that the Board of Patent Appeals considers me an expert on this subject. As an expert ... I would agree [Dr. Swartz's invention] ... does have utility" [Letter of Michael J. Schaffer (8/7/2001)]**

40. The Decision ignores the Office's latest witness, Jed Rothwell (cited in the Decision out of context) has turned on them and said:

**"None of my statements referred to the functionality, operability or performance of Dr. Swartz's multiring calorimeter. Nothing I have published or heard from scientists casts doubt on the claimed capabilities of Dr. Swartz's invention. In fact, at the Conference reviewed in the article, I interviewed many people and some scientists, such as Dr. Michael McKubre, were enthusiastic about Dr. Swartz's device. Therefore I stated that it may well be a "superb research tool" in the article quoted. It is apparent that the judges of the Decision have standards that are ludicrous and unscientific." [Declaration of Jed Rothwell (8/2001)]**

41. Corroborating the above, that the Decision was incorrect, Dr. Eugene F. Mallove has said:

**"The activity of a sample is an important issue and its measurement has great utility. ... in measuring both endothermic and exothermic chemical and chemical-like reactions, ... The invention does not require the reproducibility of cold fusion phenomena, such as excess heat, to be secure, ....**

**"... Rothwell actually praises (the present invention) ... when he says, "This could be a superb research tool..."**

**" [Declaration of Dr. Eugene F. Mallove (8/2001)]**

42. Corroborating the above, that the Decision was incorrect, Dr. Scott R. Chubb has said:

**"the patent office (PTO) has ignored the facts involving the present invention, ... The patent application provides a well-defined procedure, understandable by anyone skilled in the art, that can be used to implement the invention. ... It is evident that the patent office has become recalcitrant, with its opinion in contradiction to existing evidence as promulgated through peer-reviewed literature."**

**"Dr. Swartz has invented an important, new device, whose purpose has value for measuring activity of a sample. ... I assert that the PTO has failed to distinguish between the very different sets of claims associated with measurements of high energy particles and those involving excess heat." [Declaration of Dr. Scott R. Chubb (8/2001)]**

43. Corroborating the above, that the Decision was incorrect, Dr. Hal Fox has said:

**"It is my professional judgment that the method of measuring the activity of sample in the above-entitled action is clever, not obvious, and is an important invention with utility. ... The Decision has ignored numerous filings delivered to the Patent Office by Dr. Swartz**

**and others. ... It is not credible that hundreds of scientists and inventors are all mistaken in their experiments and data, or that only the patent examiners are sufficiently educated to point out the faults of these inventions." [Declaration of Dr. Hal Fox. (8//2001)]**

This indicates that the measurement of activity has utility, and the precise invention has operability. The Board refuses to admit and of these facts (*supra*) which were submitted to the record, and many of which were submitted to the Board twice before, and systematically ignored.

## SUMMARY

44. This single Request for Reconsideration or Modification is reasonable and consistent with the evidence in the record. The Decision should logically match and demonstrate accuracy consistent with said record including the Declarations. In this case, it does not. This is not an *ex parte* case, but a case where there were multiple responses by both parties, and instead of honest reporting, fraud is being encouraged. In this Request, the inaccurate statements, facts, and evidence are clearly again laid out to give the Board an opportunity to correct the situation.

45. The Appellant has taught in the original specification and claims how the activity can be measured by a multiring calorimeter. The method and apparatus measure the activity, with controls and measurement of noise. The original specification and claims 13-14, 21-22, and 24-39 (all pending claims) taught the subject matter defined by each of the rejected claims, set forth the best mode contemplated, and distinctly point out and claim the subject matter which constitutes the invention. The original specification and claim adequately presented the claimed invention so that an artisan, or those skilled in the art, --who unlike the Board actually read the it-- could practice it without undue experimentation [*In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988), citing with approval *ex parte* Forman, 230 USPQ 546, 547 (Bd. Pat. App. & Int. 1986)]. The invention (in structure, operation and composition) is defined by the claims and the original specification, and in this case they correctly and accurately define the invention --which is to measure the activity of a sample-- and therefore there is enablement (a question of law; *In re Fouché*, 439 F.2d 1237, 1243, 169 USPQ 429, 434, (CCPA 1971)). The enablement, utility, and operability are grounds of patentability [*Newman v. Ouigg*, 877 F.2d 1575, 1581, 11 USPQ2d 1340, 1345 (Fed. Cir. 1989)]. Therefore, the original specification and claims were an adequate and enabling disclosure and complied and conformed with the Patent Act.

46. The invention has been confirmed both in Declarations and the peer-reviewed publication [Swartz. M., 1997, "Consistency of the Biphasic Nature of Excess Enthalpy in Solid State-Anomalous Phenomena with the Quasi-1-Dimensional Model of Isotope Loading into a Material" *Fusion Technology*, 31, 63-74] proving utility and operability (a question of fact). Said Declarations and the published article demonstrating the invention are objective evidence regarding utility and enablement.

47. The Decision does not comport with any notion of fair play of justice.

- i. The Board has not discussed the claims of record. This failure, and the inaccurate statements indicate that the tongue of the author of the Decision was firmly in cheek. It is submitted that the Board's total absolute and sole reliance and reference to art cut of a cloth other than this specification and claims, demonstrates that the position of the Board (and Office) is weak, heralding the need for allowance of the present invention.
- ii. Even though the Office has not addressed the invention but attacked one of the possible environments in which it is useful, there was substantial argument addressing the examiner's rejection consistent with In re Marzocchi and In re Oetiker. The Declarations fully address all matters criticized by the Office. The Court, like the Board was Obligated by law to assume that Appellant's Declarants' unrebutted assertions - many made before the Appeal-- are true [Lewis v. Bours, 119 Wn.2d 667, 670, 1992], but has not.
- iii. The unrebutted Declarations have been ignored except one (1) and thus it cannot be determined from the record which - if any - of these submitted averments by the Declarant have been formally considered by the Board.
- iv. Appellant elected to go beyond that to achieve validation by publication in the peer-reviewed hot fusion literature controlled by the American Nuclear Society. It is egregious when that paper has been submitted more than have a dozen times, that the PTO and Board conveniently lose it each time.

48 The present invention has significant utility. Energy needs dominate the economy and welfare of humanity. Claims 13-14, 21-22, and 24-39 (all pending claims) clearly define subject matter of considerable utility, and Appellant has conformed with the requirements of §101 of the Patent Act. Measurement of activity has utility because it is convincing to one of ordinary skill in the art and Appellant has submitted several Declarations saying the teachings have utility as an invention to measure activity. The Board must admit that it cannot honestly claim the lack of utility for the measurement of activity, or the measurement of any other parameter.

49. The facts here show the Appellant did demonstrate operability and utility of the present invention. The original specification and claims complied and conformed with the requirements of 35 U.S.C. §112, first paragraph, and 35 U.S.C. §101 of the Patent Act. The Examiner has produced no evidence to the contrary pertaining to the original specification and claims.

50. Appellant regrets inadequacies that reflect a lack of legal education in this Request for Reconsideration, but the U.S. Supreme Court has ruled that any *pro se* litigant is entitled to less stringent standards [U.S. Rep volume 404, pages 520-521 (1972)].

## Conclusion

This Request for Reconsideration and Modification should be granted. The Decision has inaccurate statements, has ignored the original specification and claims as it has focused on cloth cut of other art, and has ignored most of the supplied Declarations and a key reference proving enablement at the time of filing. The appellant therefore respectfully requests that the Board reverse the examiner's rejections of claims 13-14, 21-22, and 24-39 (all claims) which stand rejected pursuant to 35 U.S.C. 112 and 35 U.S.C. 101.

Respectfully submitted,

---

Mitchell Swartz, ScD, MD, EE, Appellant, *pro se*  
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### Certificate Of Mailing [37 CFR 1.8(a)]

To Whom it Does Concern:

I hereby certify that this correspondence will be deposited with the United States Postal Service by First Class Mail, postage prepaid, in an envelope addressed to

"The Commissioner of Patents and Trademarks  
Washington, D.C. 20231" on the date below.

Thank you.

Sincerely,

August 15, 2001

M.R. Swartz

**United States Court Of Appeals  
For the Federal Circuit**

02 - 1240  
(Serial No.: 08-406,457)

**IN RE MITCHELL R. SWARTZ**

**Appeal from the Board of Patent Appeals and Interferences  
(No. 98-2593)**

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**REPLY BRIEF**

**Dr. Mitchell Swartz, pro se  
P.O. Box 81135  
Wellesley Hills, MA 02481**

**July 15, 2002**

## (2) TABLE OF CONTENTS OF REPLY BRIEF

**United States Court Of Appeals For The Federal Circuit**

**02 - 1240**

**(Serial No.: 08-406,457)**

(1) CERTIFICATE OF INTEREST PURSUANT (Rule 47.4)	##
(2) TABLE OF CONTENTS	i
(3) TABLE OF AUTHORITIES	iii
(4) STATEMENT OF RELATED CASES	##
(5) JURISDICTIONAL STATEMENT	##
(6) STATEMENT OF THE ISSUES FROM APPELLEE'S DISINGENUOUS AND NEW ARGUMENTS	v
(7) STATEMENT OF THE CASE INVOLVING REPLY BRIEF	1
(8) STATEMENT OF FACTS WITH REFERENCES TO THE RECORD (Rule 28(E))	1
Have The Appellees Addressed The Decision's Failure To Describe The Written Description Of '457?	1
Have The Appellees Addressed The Fact That Temperature, Voltage, Etc. Were Specified And Discussed In The Original Specification?	2
Have The Appellees Addressed The Fact That The Measurement Of Heat Generation ('Activity') Is Attainable?	3
Is Hydrogen The Only Fuel?	4
Have The Appellees Been Truthful About The Graph?	4
Is Excess Heat Needed?	5
Did The Appellees Address That They Misread The Claims?	7
Are The Claims All Before The Board?	8
Have The Appellees Addressed The Fact Of Other Uses Of The Present Invention, Consistent With The Directive of 00-1108 Regarding Utility?	9
(9) SUMMARY OF THE ARGUMENTS	##
ARGUMENTS UNDER 35U.S.C. §112	##



<b>ARGUMENTS UNDER 35U.S.C. §101</b>	<b>**</b>
<b>(10) ARGUMENTS BY ISSUE (standards of review)</b>	<b>11</b>
Have The Appellees Addressed The Fact That The Decision Ignored Submitted Affidavits?	11
Did The Appellees Comply With 1.131(A)(1)?	11
Did The Decision Mistake A Question Of Fact For A Question Of Law?	16
Have The Appellees Addressed The Fact That Their Own Witnesses Dispute them?	17
Have The Appellees Addressed The Fact That The Written Description Is Consistent With Enablement?	18
Have The Appellees Addressed Swartz(97) Demonstrating Enablement, Or The Fact That none of the eleven (11) submitted copies of Swartz(97) is Docketed?	18
Have Appellees Addressed That The Decision Discusses Art Other Than The Present Invention?	21
Did Appellees Respond To The Scientific Criticism Of Their Position?	22
Have The Appellees Admitted That The Exhibits And Declarations Have Not Been Docketed?	24
Have The Appellees Admitted That Applicant Responded With Some Of His Responses Are Signed Off By Examiner?	25
Did Japan Cease Cold Fusion R&D?	26
Did the Appellees comply with the United States Constitution And Congressional will?	27
<b>(11) SHORT CONCLUSION STATING THE PRECISE RELIEF SOUGHT</b>	<b>28</b>
<b>(12) CERTIFICATE OF SERVICE Rule 25 (d)</b>	<b>30</b>
<b>(13) CERTIFICATE OF COMPLIANCE Rule 32 (a) 7</b>	<b>30</b>
<b>(14) CERTIFICATE OF MAILING</b>	<b>30</b>
<b>** = Located In Appellant's Appeal Brief</b>	

### (3) TABLE OF AUTHORITIES

02 - 1240

(Serial No.: 08-406,457)

<u>Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics</u>	Page 28
<u>Bloom v. Illinois</u> , 88 Ct. 499 S.Ct. 1477	28
<u>Chelebda v. H.E. Fortuna &amp; Brothers Inc</u> 609 F.2d 1022 (1st Cir. 1979)	13
<u>Chisum on Patents</u> , 4.04[4] [1983]	15
<u>Cross v. Iizuka</u> , 753 F.2d 1040, 1044 n.7, 224 USPQ 739, 742 n.7 (Fed. Cir. 1985)	14
<u>Diamond v. Chakrabarty</u> 447 U.S. 303 (1980); 447 U.S. 303, No. 79-136, quoting DeepSouth Packing Co. v. Laitram Corp., 406 U.S. 518, 530 -531 (1972)	27
<u>Donatelli v. National Hockey League</u> , 893 F.2 459, 465 (1st Cir. 1990))].	26
<u>Duncan v. Louisiana</u> , 88 S.Ct.1444	28
<u>E.I. du Pont de Nemours &amp; Co. v. Berkle' &amp; Co.</u> , 620 F.2d 1247, 1258 n.10, 1260 n.17, 205 USPQ 1,8n10, 10n.17 (8th Cir. 1980)	15
<u>Ex parte Gray</u> 10 USPQ2d 1922, 1928 (Bd. Pat. App. & Inter. 1989)	15
<u>Ex parte Porter</u> 25 USPQ2d 1144, 1147 (Bd. of Pat. App. & Inter. 1992)	14
<u>Frontiero v. Richardson</u> , 93 S.Ct. 1736, 411 U.S. 677	28
<u>Gamez v. Toledo</u> , 42 U.S.C. §1983	28
<u>Gass v. Lopez</u> , 95 S. Ct 729	28
<u>Griffin v. Breckenridge</u> , 91 S Ct 179D	28
<u>In re Brana</u> , 51 F.3d 1560, 1564 n.12, 34 USPQ2d 1436, 1439 n.12 (Fed. Cir. 1995)	15,20
<u>In re Chilowsky</u> 43 CCPA 775, 229 F.2d 457, 108 USPQ 321 (1956)	20
<u>In re Eltgroth</u> , 419 F.2d 918, 164 USPQ 221 (CCPA 1970)	20
<u>In re Ferens</u> 417 F.2d 1072, 1074, 163 USPQ 609, 611 (CCPA 1969)	14
<u>In re Fouche</u> 439 F.2d 1237, 1243, 169 USPQ 429, 434, (CCPA 1971)	8
<u>In re Gazave</u> , 54 CCPA 1524, 379 F.2d 973, 154 USPQ 92 (1967)	20
<u>In re Hogan</u> , 559 F.2d 595, 60S, 194 USPQ 527, 537 (CCPA 1977)	6
<u>In re Irons</u> 52 CCPA 938, 340 F.2d 974, 144 USPQ 351 (1965)	13
<u>In re Marzocchi</u> , 439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971)	15

<u>In re Kaslow</u> , 707 F.2d 1366, 1376, 217 USPQ1089, 1096 (Fed. Cir. 1983)	8
<u>In re Morris</u> 127 F.3d 1048, 1053-56, 44 USPQ2d 1023, 1027-30 (Fed. Cir. 1997)]	6,14
<u>In re Oetiker</u> 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992)	14,15,26
<u>In re Prater</u> 415 F.2d 1393, 162 USPQ 541 (CCPA 1969)]	6
<u>In re Swartz</u> [00-1107, 00-1108]	21,22
<u>In re Vaeck</u> 947 F.2d 488, 495-96, 10 USPQ2d 1438, 1444 (Fed. Cir. 1991)	14
<u>In re Wands</u> 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988)	20
<u>In re Ziegler</u> 992 F.2d 1197, 1200, 26 USPQ2d 1600, 1603 (Fed. Cir. 1993)	13
<u>In re Zietz</u> , 893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989)	8
<u>In re Zurko</u> 142 F.3d 1447, 1449, 46 USPQ2d 1691, 1693 (Fed. Cir.), <i>cert. granted</i> , 119 S. Ct. 401 (1998)	14
<u>Krantz and Croix v. Olin</u> , 148 USPQ 659, 661-62 (CCPA 1966)	14,15
<u>Leasco Data Processing Equip. Corp. v. Maxwell</u> , 468 F.2d 1326 (2d Cir. 1972)	26
<u>Lewis v. Bours</u> , 119 Wn.2d 667, 670, 1992	13
<u>Marino v. Hyatt Corporation</u> , 793 F.2d 427, 430 (1st Cir. 1986)	13
<u>Mayberry v. Penna.</u> , 91 S.8.	28
<u>Morrill v. Tong</u> , 390 Mass. 1207 129 (1983)	13
<u>Niehoff v. Sahagian</u> , 103 A.2d 211 (Me. 1954)	26
<u>Peckham v. Continental Casualty Ins. Co.</u> , 895 F.2d 830, 836 (1st Cir. 1990)	26
<u>People v. Pierce</u> , 66 Cal. 2d 53 (1967)	26
<u>Pizarro v. Hotels Concorde Int'l, C.A.</u> , 907 F.2d 1256 (1st Cir. 1990)	26
<u>Rannard v. Lockheed Aircraft Corp.</u> , 26 Cal. 2d 149 (1945)	26
<u>Raytheon Company V. Roper Corporation</u> , U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592	13,15
<u>Sawtelle v. Farrell</u> , 70 F.3d 1381, 1387 (1st Cir. 1995)	26
<u>Standard Oil Co. (Indiana) v. Montedison</u> , S.P.A., 664 F.2d 356, 375, 212 USPQ 327, 344 (3rd Cir. 1981), <i>cert. denied</i> , 456 U.S. 915, 102 S.Ct. 1769, 72 L.Ed.2d 174 (1982)	15
<u>U.S. v. Price</u> , 86 S Ct 1152, 1157, Footnote 7	26,28
<u>Weiss v. Weiss</u> , 436 N.Y.S. 2d. 862, 52 N.Y. 2d. 170 (1981)	28
<u>Wood v. Strickland</u> , 95 S Ct 9S2	28

**(6) Statement Of The Issues**  
**Developed By Appellee's New And Disingenuous Arguments**

**Have The Appellees Addressed The Decision's Failure To Describe The Written Description Of '457?**

**Have The Appellees Addressed The Fact That Temperature, Voltage, Etc. Were Specified And Discussed In The Original Specification?**

**Have The Appellees Addressed The Fact That The Measurement Of Heat Generation ('Activity') Is Attainable?**

**Is Hydrogen The Only Fuel?**

**Have The Appellees Been Truthful About The Graph?**

**Is Excess Heat Needed?**

**Did The Appellees Address That They Misread The Claims?**

**Are The Claims All Before The Board?**

**Have The Appellees Addressed The Fact Of Other Uses Of The Present Invention, Consistent with The Directive of 00-1108 Regarding Utility?**

**Have The Appellees Addressed The Fact That The Decision Ignored Submitted Affidavits?**

**Did The Appellees Comply With 1.131(A)(1)?**

**Did The Decision Mistake A Question Of Fact For A Question Of Law?**

**Have The Appellees Addressed The Fact That Their Own Witnesses Dispute them?**

**Have The Appellees Addressed The Fact That The Written Description Is Consistent With Enablement?**

**Have The Appellees Addressed Swartz(97) Demonstrating Enablement, Or The Fact That none of the eleven (11) submitted copies of Swartz(97) Is Docketed?**

**Have Appellees Addressed That The Decision Discusses Art Other Than The Present Invention?**

**Did Appellees Respond To The Scientific Criticism Of Their Position?**

**Have The Appellees Admitted That The Exhibits And Declarations Have Not Been Docketed?**

**Have The Appellees Admitted That Applicant Responded With Some Of His Responses Are Signed Off By Examiner?**

**Did Japan Cease Cold Fusion R&D?**

### **(7) Statement Of The Case Involving Reply Brief**

1. The Appellee's Brief contains both contradictory statements and some important relevant admissions. This Reply Brief addresses the Appellees new arguments and misstatements.

References herein to the Appellant's Appendix are labeled as "A" (e.g. A45).

### **(8) Statement Of Facts With References (Rule 28(E))**

#### **FALSE STATEMENTS REGARDING THE '457 SPECIFICATION**

##### **Have The Appellees Addressed The Decision's Failure To Describe The Written Description Of '457?**

2. The Decision and Appellee's Brief ignore the present invention ('457) which teaches a novel calorimeter (heat-measuring instrument) used to examine metal samples or thermal controls regarding the heat which they produce off when electricity is driven through them [A183 in '457, A72 in Swartz(97), A178; also A193-195, and A261-268].

Despite the standards of review, nothing in the Decision, and only one sentence in the Appellee's Brief substantively and accurately discusses the present invention:

*"Among other things, the specification describes a multi-ring calorimeter that allegedly 'enables the possibility of an accurate and precise characterization of a sample of a material, including whether said sample is capable of excess heat and under which conditions.'(A159.)"*

[Appellee's Brief]

Except for this brief admission, the Appellee's Brief ignores the present invention despite that the Office admitted to what the invention is (A193-195).

**Have The Appellees Addressed The Fact That Temperature, Voltage, Etc. Were Specified And Discussed In The Original Specification?**

3. The Appellees falsely state:

*"... the Board found... "there is no... disclosure... of a specific operative embodiment... , including ... size, : purity ...pressure, temperature, voltage, ...."*

[Appellee's Brief]

**☐ The Truth - Operability Was Taught With Precision And Accuracy**

This new argument is false because the flawed Decision merely rubber-stamped the Office's previous false statement. As discussed in the Appeal Brief on pages 16-17, both are contradicted absolutely by the record [Table 3 (A147)] because they were thoroughly discussed in the original specification. The Office is disingenuous about temperature, voltage, purity of signal (thermal noise), and calorimeter size including specific heat (CZ12), mass (MZ12), and effective thermal admittance [Y12].

## **Have The Appellees Addressed The Fact That The Measurement Of Heat Generation ('Activity') Is Attainable?**

4. The Appellees falsely state:

*"The only "thermal response" is that due to excess heat"*

*"'Activity,' as used in the specification, is correlated to the ability to achieve cold fusion."*

[Appellee's Brief]

### **□ Truth - Heat Production ['Activity'] Is Measured**

Appellees' new argument about activity and heat measurement is totally false. The Appellees Brief, like the Decision, simply ignores that '457 measures heat production of a sample ("activity") [A261-A268, A193-195]. In '457, the heat given off of metal samples or resistor controls, as each are driven by electrical current, is carefully monitored over time. "Activity" is defined in the present original specification as the ratio of the output heat power given off by the sample compared to the electrical input power delivered. Such heat-generating activity is used to characterize the metal samples. Figure 2 [A184 in the original specification and claims, and A76 in Swartz(97)] shows the heat output, or "activity", of several samples and controls.

### **Is Hydrogen The Only Fuel?**

5. The Appellees falsely state:

*"The only "isotopic fuel" identified in the specification is 'deuterons'"*

☐ **The Truth - The Specification Specified Hydrogen, With Deuterons As Required By The Office**

Appellees' new argument about deuterons being the "only" fuel is false. The specification is clear on this and shows the Office is disingenuous. Furthermore, the Office knows their claim is fictitious because they know that heat is created by loading palladium with hydrogen, and that there even was a cigarette-lighter invention since 1923 by Doebereiner.

### **Have The Appellees Been Truthful About The Graph?**

6. The Appellees falsely state:

*"... listing "volts, milliamperes" on Y-axis of graph, but failing to specify whether numerical values on Y-axis correspond to voltage or current"*

[Appellee's Brief]

☐ **The Truth - The Axis Were Labeled**

This new argument is false because the figure shows a key which shows curves for both current and voltage and both are numerically correct on the axis. The Office is disingenuous about the graph and the comments in the specification which clearly explained this.



## **Is Excess Heat Needed?**

7. The Appellees falsely state:

*"... the only product... in the specification were "cold fusion" reactions (A 123)"*

[Appellee's Brief]

### **☐ The Truth - The Invention Does Not Require Excess Heat Or Fusion**

It is important to note that hidden in Appellee's Brief and the record are admissions proving Appellees are disingenuous again.

The invention tests ordinary materials and electrical resistors which never generate excess heat [A225-A231, A264-268, A335-339].

The invention works for the controls, and it works for all metals including those that do not ever generate cold fusion. The Office knows this because the data was sent to them with the original specification [A193-195].

It is only by calling the present invention "cold fusion" instead of a novel multiring calorimeter and method to measure heat producing activity, that the Office can purport that the heat measurement is "an 'unattainable result' and continue the unfounded attack on the Appellant by the deliberate misreading of specification and claims as their segue to much less relevant art ("FP" for Drs. Fleischmann and Pons). As shown in Table 4(A444), the appealed Decision discusses '457 precisely zero (0) times but refers to "cold fusion" eighty-six (86) times. \*\*\*\*1

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\*\*\*\*1 - Despite the attack on the Applicant for daring to study calorimetry which he has used successfully during surgical transplants of human organs and the irradiation of human tumors by ionizing radiation, the measurement of heat producing activity is attainable, and has been done in '457.

## **LAW**

8. Ignored in the Appellee's Brief are the following standards of review.

In re Prater, 415 F.2d 1393, 162 USPQ 541 (CCPA 1969)] requires the Board to refer to the claimed invention as the focus of its Decision, but it did not.

In re Morris requires that the Office must respond to what Appellant meant, but it did not.

In re Hogan [559 F.2d 595, 60S, 194 USPQ 527, 537 (CCPA 1977)] discusses that enablement must be judged on the original specification and claims, but in this Decision it was not. In this case, Appellant published his invention for the measurement of activity, identical to the preprint at the time of filing proving that Appellant was correct, and the invention was correctly taught in the original specification and claims, on the filing date of the application.

## FALSE STATEMENTS REGARDING THE CLAIMS

### Did The Appellees Address That They Misread The Claims?

9. The Appellees falsely state:

*"... the claims on appeal are plainly limited to a process that involves cold fusion"*

#### ☐ The Truth - The Claims And Specification Define The Invention

The proof that the Appellee's statement above is untrue includes the following in the Appellees Brief, which supplements the Office's previous admission [A193-195].

The Office admits the claims specify a calorimeter which does not require cold fusion, but could be used to measure any sample. :

*"...the...multi-ring calorimeter ...allegedly 'enables ...precise characterization of a sample...including whether said sample is capable of excess heat and under which conditions.' (A159.)"*

*"The claims are directed to a method for determining an "optimum electrical drive condition" based on thermal responses that occur when electrical input power is varied. (A102.3)"*

[Appellee's Brief, underlined for emphasis]

Each and every key feature of claim 13, and the other claims, are misread as the Office leads away from the present invention to deliberately confuse the present invention with other art, and the mistakes of others, Dr. Fleischmann and Pons (FP), from 1989. This is proven because although Claim 13 teaches and claims "thermally monitoring", "electric power drive", "electric power drive", "thermal output", "optimum drive condition", and "multiring calorimeter", but the Decision discusses each of them zero (0) times. Instead, the Decision and the Appellee's Brief both substantively ignore the claims of '457 and substitutes the word "cold fusion" repeatedly for the words "heat production", "activity", "electric power drive", "thermally monitoring", "thermal output", "optimum drive condition", and even

"multiring calorimeter". NONE of these words groups --which encompass '457-- were mentioned in the Decision. \*\*\*\*-2

## LAW

10. Ignored in the Appellee's Brief are the standards of review. In re Fouche [439 F.2d 1237, 1243, 169 USPQ 429, 434, (CCPA 1971) and In re Zletz [893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989)] state that an invention (in structure, operation and composition) is defined by the claims and the original specification. This invention measures and claims the heat-producing activity of a sample.

### Are The Claims All Before The Board?

11. The Appellees falsely state:

*"Swartz's arguments are directed exclusively to claim 13."*

#### ☐ Other Claims Were Discussed In The Appeal Brief

Appellee's statement is false as shown by the record [A270-273, 307]. The status of the amendments was made in the Appeal Brief to the Board on pages 6, 26 in addition to the grouping of amendments discussion [A270-273]. Applicant not only discussed the content of the dependent claims, he also argued their merits separately from those of independent claim 13. Applicant stated that all claims do not stand or fall together with claim 13. [In re Kaslow, 707 F.2d 1366, 1376, 217 USPQ1089, 1096 (Fed. Cir. 1983)]. Therefore, all the claims of the above-entitled invention are before the Court.

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\*\*\*\*2 - The Appellees Brief continues this unfairness, and in passing mentions "optimum drive condition" and "calorimeter" six times.

**Have The Appellees Addressed The Fact Of Other Uses Of The Present Invention, Consistent With The Directive Of 00-1108 Regarding Utility?**

12. The Appellees falsely state:

*"All of Swartz's Claims Require Cold Fusion."*

*"The only "thermal response" ... is ... by cold fusion"*

[Appellee's Brief]

**☐ The Truth - The Invention Does Not Require Excess Heat Or Cold Fusion**

The Appellees know this is false because of the Office's previous admission [A193-195] and because the Appellees admit this in their Brief:

*"The claims are directed to a method for determining an "optimum electrical drive condition" based on thermal responses that occur when electrical input power is varied. (A102.3)"*

*"(a)mong other things, the specification describes a multi-ring calorimeter that allegedly "enables the possibility of an accurate and precise characterization of a sample of a material, including whether said sample is capable of excess heat and under which conditions" (A159.) " and can characterize a "sample of a material, including whether said sample is capable of excess heat".*

[Appellee's Brief]

Therefore, as the Appellees admit, it is not true that '457 involves only cold fusion.

They are disingenuous to cover for their failure to reply to the fact that the measurement of heat activity has broad application in water heating systems and so forth. This is not a new argument because it was present in the original specification which showed the invention's ability to measure heat releasing activity. The Applicant included data from samples and controls (including iron and aluminum samples) which did not show any cold fusion effect, and mentioned many

uses including the measurement of activity of a sample (Specification, page 7), and the detection of specific materials which demonstrate high activity.

As discussed in the original specification, '457 has relevance to sort ordinary samples for the amount of heat which they give off or absorb. Thus, the present invention is useful for determining the efficiency of water heaters, as demonstrated in the original specification, including other uses for the present invention in calorimetric science, water heating, laboratory testing, and electrical engineering.

This diversity of use is consistent with the directive of this court where two other inventions were also labeled "cold fusion" by the Office [A345-347, 357; A372-373, A387-388]. Cold fusion was cited as a reference for a relevant possible environment for the present invention because the Office has fixated upon it, but attention of the court is directed to the four admissions by the Office.

## **(10) Arguments By Issue**

**Have The Appellees Addressed The Fact That The Decision Ignored Submitted Affidavits?**

**Did The Appellees Comply With 1.131(A)(1)?**

13. The Appellees falsely state:

*"None of the declarations ... cure the deficiencies of the specification or the prior art."*

*"...raise no arguments not already made by Swartz that would merit a separate reply."*

**[Appellee's Brief]**

### **☐ The Truth - The Declarants Proved Operability And Utility**

These disingenuous statements are rebutted by the record. The unrebutted Declarants stated that the measurement of activity has utility and proved that the present invention has operability. The Declarations were received [A10-A13, A18] and each Declaration was accompanied by statements supporting its introduction including full and explicit showing of good cause and sufficient reason why it was not presented earlier. \*\*\*\*-3 Discussion of the Declarations was made in the Appeal Brief and Reply Brief to the Board as well as other responses to the Examiner [A198, A248-A249, 256, 285-286, 298, A319-320, A329, A334-335, A342-343, A358-360, A380-385].

The Declarants, observers skilled-in-the-art and of probative value, including Hal Fox (A44), Dr. Eugene F. Mallove, (A38), Gayle Verner (A36), Dana Rotegard (A47) Dr. Robert Bass (A32), Drs. Melvin Miles (A49), Brian Ahern (A50), Ray Kurzweil (A51), and Mitchell Swartz (A28), presented a showing that the present invention works as taught in the original specification and claims, and prove enablement at the time of filing. The Declarants also substantially, explicitly, and

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\*\*\*\*3 - Some of the Declarants stated that they were misquoted out-of-context by the Board when it rubber-stamped the Office's new arguments.

fully address and rebut all matters, issues, and putative deficiencies cited by the Office and Board with solid substantive evidence. The Declarants state that the '457 has utility and that the Office's cited art has nothing to do with the Applicant's precise invention.

Dr. Scott Chubb (A52, 8/13/2001) said, "(457 is an) important, new device, whose purpose has value for measuring activity of a sample."

Dr. Hal Fox (A56, 8/13/2001) said, "... the method of measuring the activity of sample in the above-entitled action is clever, not obvious, and is an important invention with utility".

Dr. Eugene F. Mallove said (A58, 8/13/2001), "The activity of a sample is an important issue and its measurement has great utility... The invention does not require the reproducibility of cold fusion phenomena... Rothwell actually praises (457 stating) 'This could be a superb research tool...'"

However, the Declarations have substantively been ignored. In a reversible error, the Declarations are not referred to in the Decision regarding this invention. Thus it cannot be determined from the record which - if any - of these submitted averments by the Declarant have been formally considered in the writing of the Decision. Furthermore, the Decision has not produced any relevant material substantive evidence to the contrary. The Declarations remain ignored with respect to their factual engineering content regarding operability and utility because they accurately and absolutely refute the Office's erroneous statements and position.



## **LAW**

14. Ignored in the Appellee's Brief are the following standards of review. The Office's rule [M.P.E.P. §2111.01] requires that "the words of a claim ... must be read as they would be interpreted by those of ordinary skill in the art.".

The directive of 1.131 (a)(1) requires that "When ... a patent ... is rejected ... on reference ... to a printed publication, the inventor of the subject matter of the rejected claim ... may submit an appropriate oath or declaration to overcome the patent or publication." Unrebutted declarations were submitted, but the Decision ignores them, rejecting the reasoning of Marino v. Hyatt Corporation; Morrill v. Tong; and Chelebda v. H.E. Fortuna & Brothers Inc.

In re Irons indicates that utility is a fact question [Raytheon Company v. Roper Corporation] and therefore the submitted unrebutted Declarations are relevant as proof of utility. The Declarations demonstrate that measurement of heat activity of samples was being used at the time of the filing of this patent, and that it was, and is, important and of considerable utility.

In re Ziegler [992 F.2d 1197, 1200, 26 USPQ2d 1600, 1603 (Fed. Cir. 1993)] requires the Office to accept Declarations as factual proof of utility.

Marino v. Hyatt Corporation, 793 F.2d 427, 430 (1st Cir. 1986); Morrill v. Tong, 390 Mass. 1207 129 (1983); Chelebda v. H.E. Fortuna & Brothers Inc. 609 F.2d 1022 (1st Cir. 1979); Lewis v. Bours, 119 Wn.2d 667, 670, 1992] require the Office to assume that Appellant's Declarants' unrebutted assertions are true.

In re Ferens [417 F.2d 1072, 1074, 163 USPQ 609,611 (CCPA 1969)] heralds that evidence, including Declarations, is sufficient.

In re Vaeck [947 F.2d 488, 495-96, 10 USPQ2d 1438, 1444 (Fed. Cir. 1991)] states that an enablement rejection under section 112, ¶1 is only appropriate where the written description fails to teach those skilled-in-the-art, like the Declarants, to make and use the invention.

Ex parte Porter requires that unrebutted Declarations, submitted in response to the Office's comments, should be read, examined, and carefully considered.

In re Zurko [142 F.3d 1447, 1449, 46 USPQ2d 1691, 1693 (Fed. Cir.), cert. granted, 119 S. Ct. 401 (1998)] declares that utility is a fact question [Raytheon Company v. Roper Corporation, U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592], and one which the Court must review for clear error [Cross v. Iizuka, 753 F.2d 1040, 1044 n.7, 224 USPQ 739, 742 n.7 (Fed. Cir. 1985); also In re Zurko].

In re Morris [127 F.3d 1048, 1053-56, 44 USPQ2d 1023, 1027-30 (Fed. Cir. 1997)] demands that the interpretation of operability and utility is predicated upon that which one who is skilled-in-the-art would reach. The Office should have given the claims their broadest reasonable interpretation consistent with that which those skilled-in-the-art would reach.

In re Oetiker [977 F.2d at 1445, 24 USPQ2d at 1444] requires the Board (and Office) to substantively and fully respond to the probative witnesses (A52,A55,A56,A58,A61, A28,A32,A36, A38,A44,A47, A49,A50), because Applicant undertook the full burden coming forward (A10-A13,A18).

The Decision should have responded to the unrebutted Declaration, but did not.

Ex parte Gray [10 USPQ2d 1922, 1928 (Bd. Pat. App. & Inter. 1989)] allows for corroboratory expert testimony regarding operability and utility, beyond the detailed specification. The Board erred in failing to give substantial weight to said Declarations about what they said about this invention.

In re Marzocchi and In re Oetiker require responsive argument to the fully addressed criticism against the office's unfounded notions. In re Marzocchi, 439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971)] declares that the Board cannot make the rejection it has unless it has reason to doubt the objective truth of the statements contained in the written description, here corroborated by multiple Declarations.

In re Brana, 51 F.3d at 1566, 34 USPQ2d at 1441] indicates Applicant met the "burden shift ... to provide rebuttal evidence sufficient to convince such a person of the invention's asserted utility".

The Declarations demonstrate that the original specification and claims clearly define subject matter of considerable utility. Therefore, the Applicant has fully conformed with, and satisfied, the requirements of §101 of the Patent Act and met at least one (1) stated objective [Standard Oil Co. (Indiana) v. Montedison, S.P.A., 664 F.2d 356, 375, 212 USPQ 327, 344 (3rd Cir. 1981), cert. denied, 456 U.S. 915, 102 S.Ct. 1769, 72 L.Ed.2d 174 (1982); E.I. du Pont de Nemours & Co. v. Berkley & Co., 620 F.2d 1247, 1258 n.10, 1260 n.17, 205 USPQ 1, 8n10, 10n.17 (8th Cir. 1980); Krantz and Croix v. Olin, 148 USPQ 659, 661-62 (CCPA 1966); Chisum on Patents, 4.04[4] [1983]; Raytheon Company v. Roper Corporation, U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592].

## **Did The Decision Mistake A Question Of Fact For A Question Of Law?**

15. The Appellees falsely state:

*"None of the Amicus Arguments are Persuasive. ...The amicus briefs submitted by Chubb, Fox and Mallove amount to testimonials..."*

[Appellee's Brief]

### **☐ The Truth - Declarants' Statements Are Fact**

How many Declarants does it take to overcome the Office's unsubstantiated rejection? Although Applicant discussed said Declarations in his Responses to the Examiner and the Board [A198, A248-A249,256, 285-286,298, A319-320, A329, A334-335, A342-343, A358-360, A380-385].

The Board has mistaken a question of fact for a question of law. The Board erred by dismissing declarations improperly to "opinion"-status, without an adequate explanation of how the declarations failed to overcome the *prima facie* case initially established by the Board and refuted by the evidence including the Declarations and Swartz(97).

In re Alton requires that even the use of the words "it is my opinion" to preface what someone of ordinary skill in the art knows does not transform the factual statements contained in the declaration into opinion testimony. Consequently, the Board's dismissal of the declarations (A52,A55, A56,A58,A61, A28,A32, A36,A38, A44,A47, A49,A50) on the grounds that they are "opinion" is an error of law.

**Have The Appellees Addressed The Fact That Their Own Witnesses Dispute Them?**

16. Ignored in the Appellee's Brief are that the Office's witnesses [including Dr. Rehn, Dr. Will, Dr. Schaffer (A55), and Rothwell (A61)] have turned on them regarding their notions of both the present invention and cold fusion. They directly refute and contradict the Office .

The Appellee's own witness, Dr. Michael Schaffer (A55, 8/7/01) said, "I do not see how anyone could construe anything that I wrote at Scientific American's site to imply that there is "no utility" in cold fusion, much less in instruments that might be used in cold fusion and other scientific experiments. ... It appears that the Board of Patent Appeals considers me an expert on this subject. As an expert ... I would agree [Dr. Swartz's invention] ... does have utility".

The Appellee's own witness, Mr. Jed Rothwell (cited in the Decision out-of-context, A61) said, "None of my statements referred to the functionality, operability or performance of Dr. Swartz's multiring calorimeter. Nothing I have published or heard from scientists casts doubt on the claimed capabilities of Dr. Swartz's invention. ... I stated that it may well be a 'superb research tool'".

The Appellee's citation of Dr. Michael McKubre reveals that actually said, "For me ... perhaps the best report at this conference, was that of Mitch Swartz." [Infinite Energy, 4, 20, 34-35, (98)].

17. Furthermore, as regards cold fusion which is not the present invention and is not before this court, but which the Appellee's use to obfuscate:

The Appellee's own witness, Dr. Rehn, USNavy, said "Perhaps the clearest scientific fact, at this time, is the hardest for physicists to accept: nuclear reactions

apparently do occur in deuterium-loaded Pd, Ti, and probably in other solids." [Office of Naval Research Asian Office, NAVSO P-3580, Vol. 18, Jan. 1993].

The Appellee's own witness, Dr. Will said, "Significant positive results have been obtained (by) 100 groups from more than 12 countries" [Final Report NCFI (1991)].

**Have The Appellees Addressed The Fact That The Written Description Is Consistent With Enablement?**

**Have The Appellees Addressed Swartz(97) Demonstrating Enablement, Or The Fact That None Of The Eleven (11) Submitted Copies Of Swartz(97) Is Docketed?**

18. The Appellees falsely state:

*"The present record contains numerous scientific papers and nontechnical reports of attempts to reproduce cold fusion. (See, e.g., A103-11, listing references considered by the Board, and A19-27, listing references submitted by Swartz.)"*

*"...Swartz fails to explain how any of these documents [Fusion Technology 1997, and declarations] would have enabled a person with ordinary skill in the art to cause cold fusion to occur."*

*"The Board specifically reviewed Swartz's 1997 Fusion Technology article and found that apart from conclusory statements that the article proves Swartz to be correct, Swartz "has failed to explain how the article is relevant to the claimed subject matter here on appeal." (5A7.)"*

[Appellee's Brief]

☐ **The Truth - Appellant Explained Peer-Reviewed Swartz (97) Proves Utility And Operability And Demonstrates Enablement**

In the Office's failed and new arguments, the invention is misdescribed, as following facts are not discussed:

The Applicant came forward with solid substantial, and timely, evidence of operativeness and utility including Swartz(97) [A71, Swartz. M., 1997, Fusion Technology, 31, 63-74, hereafter "Swartz(97)"]; A71, but also see A83, A90).

Swartz(97) [data, figures, graphs, and equations] is identical to what was taught in the original specification and claims on the date of the original filing. The preprint was included with the original specification. Swartz(97) proves that the present invention was operable at the time it was filed, and demonstrates validation.

Swartz(97), listed on several Forms 1440 (A14,A10-A13), was accompanied by Declarations declaring the Office was wrong and introducing the evidence, and explained how the article was relevant because it represented additional peer-reviewed substantial evidence supporting that, as of the March 20, 1995 filing date, a person with ordinary skill in the art would have been able to produce the multiring calorimeter and measure sample activity [A230-231,A258-259,A295-296, A301-303,A314-315,A335-336].

Applicant submitted Swartz(97) to the Office eleven (11) times [A10-A13, Table 1 (A18)] in the expectation that it would be recorded, read and honestly considered and discussed. Instead, it was substantively ignored and repeatedly removed from the file [A197,A240,A323-325,A327-A330,A339]. Furthermore, Swartz(97) is not listed on the Office's first Docket (A3) or the revised second Docket (A6), nor is it listed --or substantively addressed-- in the Decision. In fact, the Office was Ordered to substantively respond to the key relevant issues (A145), but has not. One hypothesis is that this occurred because Swartz(97) is material and because comparison of it [A71] with the original specification [A148] demonstrates that the invention was correctly taught in the original specification and claims on the filing date of the application [validation].

## LAW

19. The Decision is inconsistent with many standards of review, such as the following, required by the Office.

Rule 132 requires Applicant's solid, substantial, and timely, evidence submitted against the Office's rejections be considered because "(p)atentability is determined on the totality of the record, by a preponderance of the evidence with due consideration to persuasiveness of argument." [Id. at 1445, 24 USPQ2d at 1444].

In re Gazave, 54 CCPA 1524, 379 F.2d 973, 154 USPQ 92 (1967)] and In re Chilowsky [43 CCPA 775, 229 F.2d 457, 108 USPQ 321 (1956)] require consideration of the material which Applicant supplied and cited.

In re Oetiker, 977 F.2d at 1445, 24 USPQ2d at 1444 requires the Appellees to substantively respond a prima facie case of unpatentability". However, after the submission of Swartz(97) and the Declarations, which rebutted and totally addressed the comments by the Office, the burden shifted back to the Office and can only discharged by the Office "presenting evidence or reasons why persons skilled-in-the-art would not recognize in the disclosure a description of the invention defined by the claims" [Wertheim, 541 F.2d at 263, 191 USPQ at 97]. That was NOT done in this case, either by the Office or the Board.

In re Brana and In re Eltgroth, 419 F.2d 918, 164 USPQ 221 (CCPA 1970) demand that the PTO must establish a reason to doubt an invention's asserted utility, and the measurement of heat producing activity is not unbelievable. '457 is quite believable because it measures controls and all types of samples.



20. In summary, ignored in the Decision is the evidence including:

#1) Declarations from scientists of ordinary skill-in-the-art, who considered the specification and stated that the description was sufficient.

#2) The preprint and published scientific article [Swartz(97)] which was identical to the preprint which accompanied the present application.

In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988) indicates that #1 or #2 are sufficient to demonstrate that the specification provides an adequately written description of the subject matter, including how to operate the invention, and claimed the invention so that an artisan, or those skilled-in-the-art, could practice it without undue experimentation. Either #1 or #2 prove that enablement, utility, and validation. Together, #1 and #2 corroborate enablement of the present invention both *de facto* and *de jure*.

#### **Have Appellees Addressed That The Decision Discusses Art Other Than The Present Invention?**

21. This invention is not only about cold fusion, but a means to evaluate a sample's heat-producing activity. Therefore, Appellee's continual referral to other art (FP) is not a rebuttal of the Declarations and Exhibits including Swartz(97), but is a further prejudicial attack against the Applicant out of cloth not even composed of the present specification and claims. It is not relevant if "the work of and publication of Pons/Fleischmann ... has been substantially discredited.." (A 143) because the present invention is not their work or their purported subject matter.

The Office's false assertion that each invention of the applicant is cold fusion is not accurate has happened before the prejudice is systematic. The Office, in this court [In re Swartz 00-1107], falsely called that invention, for measuring the loading of

the hydrogen into a metal sample using a vibration of that sample [A345-347;A357], "cold fusion", too.

The Office, in this court [In re Swartz 00-1108], falsely called that invention, a two-step system to drive hydrogen diffusion in metals [A372-373;A387-388], "cold fusion", too. Like this case, the original specifications and claims were ignored.

This unconstitutional prejudice will happen again unless this court ensures that it does not.

### **Did Appellees Respond To The Scientific Criticism Of Their Position?**

22. The Appellees falsely state:

*"... those of skill in the arts of physics and chemistry have failed to verify or reproduce cold fusion..."*

*"Nor do any of the declarations explain why the scientific reports supporting cold fusion should be given more weight than the negative reports."*

[Appellee's Brief]

☐ **The Truth - Negative Reports Were Explained**

☐ **The Truth - The Declarants Discussed This Invention**

When the office fixated again on cold fusion, ~300 published scientific articles [over 140 pounds of Exhibits, Table 2, A19, A65, A70, A83, A92, A97, A392, A406, A415, A422, A428, A430, A430, A439, A442] including over 30 of the Applicant's own peer-reviewed papers (several published by the American Nuclear Society, Fusion Technology, such as A92, A90, A83, A392, A406, A439, A442) were submitted supporting Applicant [listed Table 2 (A19)] and demonstrating that the Office's notions are wrong. Important publications included Swartz(92), Swartz(94) and Swartz(99) [A92, A90, A83], Mallove pp246-248, Storms(90,93); Arata(90); Celani(90); Pons(90); Bockris(90); Szpak(91B); McKubre(91); Will(91,93,94);

Miles(94C,91,93B,94C); and McKubre, SRI ["Summary During ICCF-7", Infinite Energy, 4, 20, pp.34-35, (1998)]. The Exhibits were accompanied by Memoranda and Declarations [A198-225,A232-239,A242-259,A274-304; see also A348-353,A363-370] which showed good cause and clearly specified the reasons why the Exhibits were not submitted before --namely they were not necessary prior to the misstatements by the Office.

23. Many of the exhibits were published by peer-review before the present original specification [A19, A97, A92, A392] and have been checked-off by the Examiner [A445-A454]. \*\*\*\*-4

These Exhibits were extensively discussed by the Applicant [A197-201 (see the graph on A201),A277,A317-324,A349,A375-377]. They were ignored, including those of the Appellant and from US laboratories, US NAVY, EPRI, and NASA, except for many of them simply being checked off by the Examiner [A445-A454]. Instead, the Office relies on its rebutted "reports" from "science" reporters and those competing for Federal funds, all of whom do not even refer to the present invention. Nor have they been sworn in, or have been proven to be an expert, as the Applicant has done with his Declarants.

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\*\*\*\*4 - The latter prove this new argument by the Office is a moot issue because the Office admitted what the present invention was [193-195].

24. The Decision ignores the Exhibits (Table 2; A19) because they counter the Office's notions and rejection under 35U.S.C. §112, and because the Appellees cannot contradict them. Nothing has been presented by the Office or Board which differs or rebuts the probative value of Swartz(97) or the Exhibits. Only in their recent Brief do the Appellees finally admit "(t)he declarations assert that there are many positive reports (Mallove, A40, paragraph 11), that there was funding for cold fusion research in 1994 (Mallove, A40, paragraph 10), that the negative reports are wrong (Mallove, A40, paragraph 9), or biased (Mallove, A4 1-42, paragraphs 13—18; Rotegard, A47-A49, paragraph 4), or that the USPTO is biased. (Bass, A32-35; Fox, A45; Rotegard A47-49).":

The Office's handwaving to other much less relevant art (FP) is not a rebuttal, but is an irrelevant different matter. In fact, if the Office must rely upon reference to art cut of a cloth other than this specification and claims, then its position must indeed be quite weak.

#### **Have The Appellees Admitted That The Exhibits And Declarations Have Not Been Docketed?**

25. The Appellees ignored that the Office cited a video and the Applicant responded with three (3) videos [CBC (1993), CBC (1994); BBC (1994)] on May 26, 1997 and November 8, 1997. The Appellant's videos rebut the Office's reliance and dependence upon an older less accurate video. However, the videos are not considered in the Decision because the Office's witnesses each make a poor showing therein. Egregiously, although received, the Decision does not even list said three submitted videos, which like the Declarations, and Applicant's 11-times submitted peer-reviewed paper, have been conveniently "lost" although received (A10-A13,A18; A197,A240,A323-325,A327-330,A339).

**Have The Appellees Admitted That Applicant Responded With Some Of His Responses Are Signed Off By Examiner?**

26. The Appellees falsely state:

*"Swartz has pointed to no references that satisfactorily rebut Lewis, Albagli, Ewing, Cooke, Huizenga, Jones I, Jones II, Morrison, or Miller ..."*

**☐ The Truth - All Citations Have Been Rebutted**

The Appellees are grossly disingenuous. Discussion of the errors in the Office by its reliance on Lewis, Huizenga, Jones, Morrison, Miller, etc. was made with solid substantive response. These responses were in Communications to the Office AND in the Briefs to the Board. Furthermore, some of Applicant's references have already been checked off by the Examiner [A445-A454] making this a moot issue.

Discussion of the errors in Albagli was made with solid substantive response, including in this Court [A203-204, A244, A278-A279, A3553-355, A367-A370, A391, and especially A368].

Discussion of the errors in Cooke was made with solid substantive response, including in this Court [A208, A389-391].

Discussion of the errors in Huizenga was made with solid substantive response [A206, A243, A275-276, A279, A294-295].

Discussion of the errors in Jones was made with solid substantive response [A205, A251-A252, A291-292, A322; also A65, A70].

Discussion of the errors in Miller, a new argument by the Office before the Board, was made with solid substantive response [A316-317, A321].

Discussion of the errors in Morrison was made with solid substantive response [A252-253,A292-A293,A323].

NOTA BENE: The Appellees continue to quote altered data in Albagli, but fail to cite, or explain the basis for ignoring, Appellant's evidence which was timely and repeatedly submitted [A203-204,A244,A278-A279,A3553-355,A367-A370,A391, and especially A368]. The Decision thus has disingenuous false statements and citations known to be false *a priori* by the Office [Nichot'f v. Sahagian, 103 A.2d 211 (Me. 1954)] and is therefore a breach of duty [Rannard v. Lockheed Aircraft Corp., 26 Cal. 2d 149 (1945), 18 U.S.C.§1503]. The Decision is thus in error [People v. Pierce, 66 Cal. 2d 53 (1967); U.S.v. Price, 86 S. Ct. 1152, 1157, footnote 7; Sawtelle v. Farrell, 70 F.3d 1381, 1387 (1st Cir. 1995); Leasco Data Processing Equip. Corp. v. Maxwell, 468 F.2d 1326 (2d Cir. 1972); Pizarro v. Hotels Concorde Int'l, C.A., 907 F.2d 1256 (1st Cir. 1990); Peckham v. Continental Casualty Ins. Co., 895 F.2d 830, 836 (1st Cir. 1990); Donatelli v. National Hockey League, 893 F.2 459, 465 (1st Cir. 1990)].

### **Did Japan Cease Cold Fusion R&D?**

27. The Appellees falsely state:

*"Miller ...found it significant that Japan = a country for which reproducible cold fusion would mean more than to any other industrialized nation = had disbanded its three-year, \$30 million investigation into cold fusion."*

#### **☐ The Truth - Japan Continues R&D**

More disingenuous new argument by the Office which is rebutted by much Japanese effort including Mitsubishi's recent paper on cold fusion in China where the 9th International Cold Fusion meeting was three months ago. The US is now 13 years behind other countries because of the Office ignoring both the Constitution and Congressional directive.

**Did The Appellees Comply With The United States Constitution And Congressional Will?**

28. The Appellees have failed to reply to the fact that energy is a Major Financial Sector of the US economy, and even more important during War. The Board cannot honestly admit there is no utility for an invention measuring energy-production and efficiency.

**LAW**

The Appellees have ignored their failure to comply with the following controlling authorities.

Clause 8 of Section 8, Article I, by improperly eliminating an entire field involving energy and United States security.

Article VI, by interfering laws passed by Congress [Diamond v. Chakrabarty; 447 U.S. 303, 309] including that patentable statutory subject matter spans "anything under the sun that is made by man" [S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)].

Article I, Section 2, by ignoring that Appellant is entitled to the privileges and immunities of citizens in the other states. Specifically, the Decision ignores that the Office, Europe and Japan have allowed selected other patents in the very same field not allowed here [Czinn(5,231,290), Westphal(5,215,631), Ahern(5,411,654), Patterson(5,036,031), (5,318,675), (5,372,688), (5,036,031); Aspden, UK-GB 2,231,195B]. This is a dual-tiered system.

The reasoning of the Supreme Court in United States v. Nixon (1974) that all are "equal under the law".

14th Amendment, requiring an impartial tribunal [28 U.S. Code Section 144, Mayberry v. Penna., 91 S.8.; Bloom v. Illinois, 88 Ct. 499 S.Ct. 1477; Duncan v. Louisiana, 88 S.Ct.1444] and equal protection. In the light of the unrebutted Declarations, "lost" submitted papers, and the corrupted docket, there are violations of the 14th Amendment's "equal protection" clause [Frontiero v. Richardson, 93 S.Ct. 1736, 411 U.S. 677; Weiss v. Weiss, 436 N.Y.S. 2d. 862, 52 N.Y. 2d. 170 (1981)] with serious implications [Gass v. Lopez, 95 S. Ct 729; Wood v. Strickland, 95 S Ct 952; U.S. v. Price, 86 S Ct 1152, 1157, Footnote 7; Griffin v. Breckenridge, 91 S Ct 179D; Gamez v. Toledo, 42 U.S.C.§1983, and Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics].

#### **(11) Short Conclusion Stating The Precise Relief Sought Summary Of The Arguments**

29. The Applicant taught the subject matter defined by each of the rejected Claims 13-14, 21-22, and 24-39 (all pending claims) including how his apparatus and method works, set forth the best mode contemplated, distinctly pointed out and claimed the subject matter which constitutes the invention, wrote an adequate enabling disclosure, and thus complied and conformed with 35U.S.C.§112, first paragraph, of the Patent Act. The Claims clearly define subject matter of considerable utility because energy needs dominate the economy. Furthermore, measurement of heat producing activity of a sample has utility because many scientists of ordinary skill-in-the-art say it does.



30. The Decision has not discussed the invention as it was actually taught, but is cut of a cloth other than this invention which demonstrates that the Office's notions are quite weak, heralding the need for allowance of the present invention.

The Decision substantively ignored the unrebutted Declarants, skilled-in-the-art, who have disputed the Office and attest to conformation with 35U.S.C. §101.

The Decision substantively ignored Swartz(97) which demonstrates enablement at the time of the initial filing despite that validation only comes through peer-review. The preprint of Swartz(97) was included with the specification and is indelible proof that as of the filing date of this application, one of skill in the art could conduct this patent without undue experimentation (A136).

The Decision contains copious material misstatements, including those corrected by the Office's own witnesses.

The Decision ignores the standards of review and the Office's own rules.

WHEREFORE for the above reasons, including unrebutted Declarations and the peer-reviewed published paper [Swartz(97)], and because the Appellees are not entitled to dismiss this important patent application, relevant to energy measurement and US energy security, in their misdirected favor as a matter of law, the Appellant respectfully requests that the court reverse the examiner's rejections of claims 13-14, 21-22, and 24-39 (all claims) which stand rejected pursuant to 35 U.S.C. 112 and 35 U.S.C. 101 of the Patent Act as is just and reasonable, or remand the case back to the Office to address these matters of law and errors of fact cited herein.

Respectfully submitted,



---

Mitchell Swartz, Appellant, *pro se*  
PO Box 81135  
Wellesley Hills, MA 02481

**(13) CERTIFICATE OF SERVICE (Rule 25 (D))**

Appellant certifies that he has complied with Rule 25 (d). Appellant mailed two (2) copies of the above Reply Brief first class prepaid to Appellee's counsel, Attorney Thomas Krause, Associate Solicitor, 2121 Crystal Drive, P.O. Box 15667, Arlington, Virginia, 22215, this July 15, 2002.

  
Mitchell Swartz

**(14) CERTIFICATE OF COMPLIANCE (Rule 32 (A) 7 )**

Appellant certifies that he has complied with Rule 32 (a) 7, and that there are ~6816 words in the Reply Brief.

  
Mitchell Swartz

**(15) CERTIFICATE OF MAILING**

To Whom it Does Concern:

Appellant hereby certifies that this Reply Brief (twelve copies as directed), has been deposited with the United States Postal Service by First Class Mail, postage prepaid, in a timely manner based on permission from Appellee's counsel, in envelope addressed to

"Clerk, U.S. Court of Appeals for the Federal Circuit  
717 Madison Pl., NW  
Washington, DC 20439" on the date below:

Thank you.

July 15, 2002

  
M.R. Swartz

# **(16) CONTENTS OF APPENDIX**

02 - 1240

(Serial No.: 08-406,457)

		Page
Table of Contents		1
Pursuant to FRAP 30(a)(1)(A) - First Certified Docket from the Office	Various	3
Pursuant to FRAP 30(a)(1)(A) - Second (Corrected) Certified Docket from the Office	Various	6
Pursuant to FRAP 30(a)(1)(A) - Proof of Receipt by the Office; Office Date-Stamped	Various	10
Pursuant to FRAP 30(a)(1)(A) - Additional Evidence of Receipt of Swartz(97)	Various	14
Pursuant to FRAP 30(a)(1)(A) - Letter to Examiner Wasil re: missing Swartz(97)	11/7/87	17
Pursuant to FRAP 30(a)(1)(A) - Table 1 - Receipts by Office date-stamp of Swartz(97)	Various	18
Pursuant to FRAP 30(a)(1)(A) - Table 2 - References, Exhibits and Other Art Provided by Appellant	Various	19
Pursuant to FRAP 30(a)(1)(B) - Dr. Swartz Declaration Supporting Appeal	9/16/97	28
Pursuant to FRAP 30(a)(1)(B) - Declaration of Dr. Bass ('976)	4/17/96	32
Pursuant to FRAP 30(a)(1)(B) - Declaration of Ms. Gayle Verner	9/16/97	36
Pursuant to FRAP 30(a)(1)(B) - Declaration of Dr. Mallove ('937)	2/6/94	38
Pursuant to FRAP 30(a)(1)(B) - Declaration of Dr. Fox ('976)	5/16/95	44
Pursuant to FRAP 30(a)(1)(B) - Declaration of Rotegard ('976)	5/15/94	47
Pursuant to FRAP 30(a)(1)(B) - Letter from Dr. Miles	4/30/96	49
Pursuant to FRAP 30(a)(1)(B) - Letter Dr. Brian Ahern	4/18/96	50
Pursuant to FRAP 30(a)(1)(B) - Letter Dr. Ray Kurzweil	4/18/96	51
Pursuant to FRAP 30(a)(1)(B) - Affidavit of Dr. Scott Chubb	8/13/01	52
Pursuant to FRAP 30(a)(1)(B) - Letter of Dr. Michael J. Schaffer	8/7/01	55
Pursuant to FRAP 30(a)(1)(B) - Affidavit of Dr. Hal Fox	8/13/01	56
Pursuant to FRAP 30(a)(1)(B) - Affidavit of Dr. Eugene F. Mallove	8/13/01	58
Pursuant to FRAP 30(a)(1)(B) - Affidavit of Mr. Jed Rothwell	8/14/01	61
Pursuant to FRAP 30(a)(1)(B) - Letter from Dr. Miles to Mr. Dagani	5/20/98	63

Pursuant to FRAP 30(a)(1)(B) - Miles, "Reply to the Examination of Claims :" J. Phys Chem	4/98	65
Pursuant to FRAP 30(a)(1)(B) - Miles, "Reply to An Assessment of Claims :" J. Phys Chem	4/98	70
Pursuant to FRAP 30(a)(1)(B) - Swartz, "Consistency of the Biphasic Nature of Excess Enthalpy in Solid State Anomalous Phenomena with the Quasi-1-Dimensional Model ...", Fusion Technology, 31, 63-74, January 1997 issue (1997)	1/97	71
Pursuant to FRAP 30(a)(1)(B) - Swartz, "Optimal Operating Point Characteristics", <i>Proceedings of ICCF-7</i> , (1998).	4/98	83
Pursuant to FRAP 30(a)(1)(B) - Swartz, "Improved Electrolytic Reactor Performance Using $\pi$ -Notch System Operation and Gold Anodes", <i>Transactions of the American Nuclear Association</i> , Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85, (1998).	8/98	90
Pursuant to FRAP 30(a)(1)(B) - Swartz, "Quasi-One-Dimensional Model of Electrochemical Loading of Isotopic Fuel into a Metal", Fusion Technology, 22, 2, 296-300 (1992).	4/94	92
Pursuant to FRAP 30(a)(1)(B) - Swartz, "Isotopic Fuel Loading Coupled to Reactions at an Electrode", <i>Transactions of Fusion Technology</i> , vol 26, pp 74-77, (Dec. 1994)	12/94	97
Pursuant to FRAP 30(a)(1)(C) - Decision Under Appeal	7/27/01	101
Pursuant to FRAP 30(a)(1)(C) - Order Remanding for consideration of papers (10/9/98)	10/9/98	145
Pursuant to FRAP 30(a)(1)(C) - Table 3 - False Statements in Decision	7/27/01	147
Pursuant to FCR 30(a)(2)(A)(iii) - Original Specification	3/15/95	148
Pursuant to FCR 30(a)(2)(A)(iii) - Present Claims - Exhibit "A"	=	188
Pursuant to FCR 30(a)(2)(A)(iii) - Amendments Under Appeal - Exhibit "B"	=	192

08 406457

## PATENT APPLICATION

08406457

Date  
Entered  
or  
Counted

CONTENTS

MAY 16 1995

LICENSING &amp; REVIEW

	1: Application <i>General Papers</i>	
	2: <i>45 Days Letter (132)</i>	<i>4/13/95</i>
	3: <i>Access Acknowledgement</i>	<i>June 24, 1995</i>
	4: <i>Abstract (132)</i>	<i>3/18/95</i>
	5: <i>F.D.S.O./ATT</i>	<i>3-20-95</i>
<i>8-5</i>	6: <i>Restriction (30 days)</i>	<i>8-5-95</i>
	7: <i>Election 10-6</i>	<i>8/30/96</i>
<i>10-11</i>	8: <i>Restriction (30 days)</i>	<i>10/11/96</i>
	9: <i>Election 11-18</i>	<i>11-8-96</i>
<i>12-19</i>	10: <i>Rejection 3 months</i>	<i>12/24/96</i>
	11: <i>Challenger 4-2</i>	<i>3/17/97</i>
	12: <i>Prior Art Writ</i>	<i>3-17-97</i>
<i>5-9</i>	13: <i>Final Rejection (3 months)</i>	<i>5/12/97</i>
	14: <i>Reel</i>	<i>5/19/97</i>
	15: <i>Challenger (N.E.)</i>	<i>5/30/97</i>
	16: <i>Petition Prior Art Writ</i>	<i>5/30/97</i>
<i>(denied)</i>	17: <i>Decision on Petition 1.97 (INS)</i>	<i>6/26/97</i>
<i>6-10</i>	18: <i>Advising Action</i>	<i>6-26-97</i>
	19: <i>Amat D (N.9)</i>	<i>7/8/97</i>
<i>7-24</i>	20: <i>Advisory Action</i>	<i>7/21/97</i>
	21: <i>Response to Petition 8-1-1991</i>	<i>7-7-97</i>
	22: <i>Reel</i>	<i>7-7-97</i>
	23: <i>Decision on Petition 12-1991</i>	<i>8/14/97</i>
	24: <i>Appeal 98-2593</i>	<i>8/4/97</i>
	25: <i>Appeal Brief (3) 10-26</i>	<i>9-22-97</i>
<i>10-91</i>	26: <i>Letter Non-Compliance</i>	<i>10-31-97</i>
	27: <i>Appeal Brief (3) 11-13</i>	<i>11-13-97</i>
<i>5/26</i>	28: <i>Response to Appeal</i>	<i>5-26-98</i>
	29: <i>Reply Brief (3) 7-7</i>	<i>6/29/98</i>
	30: <i>Letter A3</i>	<i>7/20/98</i>
	31: <i>Appeal Reply Brief (3)</i>	<i>8/13/98</i>
<i>11</i>	32: <i>Notice of Conditional Allowance</i>	<i>9/05/98</i>
	33: <i>Remand to Examiner OCT 1998</i>	

**SEARCHED**

Class	Sub.	Date	Exmr.
376	100 247 245 146 143	12-12-96	<input checked="" type="checkbox"/>
374	31 32 33 34		
None	update	5-5-97	<input checked="" type="checkbox"/>

34. Letter 10/23/96 7  
 35. Decision Board Appeal  
 36. 10/23/96 10/23/96  
 37. 12/14/01  
 38. Appeal to Fed. CIR: 1-21-02

**SEARCH NOTES**

	Date	Exmr.
AVS image & text	12-12-96	<input checked="" type="checkbox"/>
A4		

**INTERFERENCE SEARCHED**

Class	Sub.	Date	Exmr.

**U. S. DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office**

February 28, 2002

(Date)

**THIS IS TO CERTIFY that the annexed is a true copy from the records of this office  
of the "Contents" page of the file wrapper of the  
patent application identified below, said "Contents"  
page being a list of the papers comprising the  
record before the United States Court of Appeals for  
the Federal Circuit in the matter of**

**The Patent Application of**

**Mitchell R. Swartz**

**Serial No: 08/406,457**

**Filed March 20, 1995**

AS

**By authority of the  
DIRECTOR OF THE UNITED STATES  
PATENT AND TRADEMARK OFFICE**

*Jawanna P. Hawkins*  
Chief Clerk

UNITED STATES COURT OF APPEALS  
FOR THE FEDERAL CIRCUIT

IN RE SWARTZ

Appeal No. 02-1240

APPELLEE'S STATEMENT OF CORRECTNESS OF CERTIFIED LIST

By Order dated March 29, 2002, the Court has directed Appellee, the Director of the United States Patent and Trademark Office ("the USPTO") to "respond . . . to the issue of correctness of the certified list [raised by Appellant in his March 12, 2002 motion] by either filing a corrected certified list or a statement that the certified list filed on March 1, 2002 is correct." Order at 2. The Court's order issued in response to Appellant's allegation that the certified list supplied by the USPTO is "inaccurate, incomplete, and missing at least twelve [12] of Appellant's Declarations which were received by the Office based upon the date stamps the Office [Exhibit B1, B2]." Appellant's Notice of Need for Correction of Certified List at 1.

The certified list filed on March 1, 2002, is correct in that it is a true and accurate copy of the USPTO's official listing of the contents of the patent application file. The certified list contains a listing for each of the 38 papers in this case. However, consistent with USPTO practice, the individual docket entries do not enumerate all of the attachments to each paper. For example, if an applicant submits an appeal brief with ten attachments, the appeal brief is entered on the docket line, but each attachment is not. Accordingly, the failure to specifically refer to Appellant's declarations does not make the certified list incomplete or inaccurate, and no correction is necessary on the basis raised by Appellant. For Appellant's convenience, Attachment A hereto is a typed version of the certified list, which has also been certified by the USPTO.



In view of Appellant's concern, the USPTO has reviewed the file and confirmed that the declarations listed in the receipts attached to Appellant's motion are in the file, as attachments to Paper Nos. 25 and 27.<sup>1</sup> These declarations were part of the record before the Board on appeal, were considered by the Board, and Appellant is free to rely on them in this appeal.

Review of the file also revealed what appears to be a labeling inconsistency between the contents of the file and the certified list. Specifically, the certified list identifies Paper No. 27 as "Appeal Brief," whereas Paper No. 27 in the file is a letter from the Appellant to the Examiner attaching, among other things, the declarations that are the subject of Appellant's motion.<sup>2</sup> We have sent a copy of the documents docketed as Paper No. 27 to Appellant, and have asked him to provide any material that he believes is missing from Paper No. 27. Any remaining concerns Appellant has regarding the

---

<sup>1</sup> Specifically, Paper No. 27 contains declarations of Dr. Mitchell Swartz (containing letters from Dr. Brian Ahern, Raymond Kurzweil and Melvin Miles), Dr. Mallove, Hal Fox, Dr. Robert Bass, Gayle Verner, and Dana Rotegard. Because Appellant's date-stamped receipts recite identical sets of six declarations on different dates (see Appellant's Exhibits B1, B2), we interpret Appellant's reference to twelve declarations as a reference to the fact that the six declarations were submitted two times. Our review of the file shows that copies of two of the six declarations (those of Dr. Swartz and Gayle Verner) are included in the file with Paper No. 25, and copies of all six declarations are included with Paper No. 27.

To be complete, we note that the file also contains a Declaration of Dr. Swartz dated March 12, 1997 (Paper No. 14, filed on May 19, 1997), a Declaration of Dr. Swartz dated June 28, 1997 (Paper No. 22, filed on July 7, 1997), and five declarations submitted by Appellant for the first time in his Request for Reconsideration (Paper No. 36; attaching declarations of Scott R. Chubb, Hal Fox, Eugene Mallove, Jed Rothwell, and Michael J. Schaffer). The Board refused to consider the latter five declarations because Appellant failed to provide any showing of "good and sufficient reasons for why they were not earlier presented." Board Decision on Request for Rehearing (Paper No. 37) at 3 (citing 37 C.F.R. § 1.195).


<sup>2</sup> The Appeal Brief appears in the file as Paper No. 25 (also docketed as "Appeal Brief"). In its decision, the Board of Patent Appeals and Interferences referred to the Appeal Brief as Paper No. 25. See, e.g., Decision on Appeal at 3 n.2. We note, however, that Appellant's postcard receipt (Appellant's Exhibit B2) refers to an Appeal Brief filed on November 13, 1997, which corresponds to the docket date for Paper No. 27.

= 3 =

completeness of the USPTO file can presumably be resolved by discussions with this office or review of the file by Appellant pursuant to Fed. Cir. R. 17(d)(1).

Dated: April 12, 2002

Respectfully submitted,

  
JOHN WHEALAN  
Solicitor

STEPHEN WALSH  
THOMAS W. KRAUSE  
Associate Solicitors

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(703) 305-9035

Attorneys for the Director of the  
United States Patent and Trademark Office

## Patent Application 08/406,457

### Contents

1. Application	
2. 45 Day Letter (152)	04/13/95
3. Access Acknowledgement	06/21/95
4. Statement (152)	05/18/95
5. I.D.S. w/Attachments	03/20/95
6. Restriction (30 days)	08/05/95
7. Election/Amendment A	08/26/96
8. Restriction (30 days)	10/11/96
9. Election	11/08/96
10. Rejection 3 months	12/24/96
11. Amendment B	03/17/97
12. Prior Art w/Attachments	03/17/97
13. Final Rejections (3 months)	05/12/97
14. Declaration	05/19/97
15. Amendment C (Not entered)	05/30/97
16. Petition & Prior Art w/Attachments	05/30/97
17. Decision on Petition 1:97 (IDS)	06/26/97
18. Advisory Action	06/26/97
19. Amendment D (Not entered)	07/08/97
20. Advisory Action	07/21/97
21. Petition R-1.181	07/07/97
22. Declaration	07/07/97
23. Decision on Petition	08/14/97
24. Appeal 98-2593	08/04/97
25. Appeal Brief (3) & Declaration	09/22/97
26. Letter Non-Compliance	10/31/97
27. Appeal Brief (3)	11/13/97
28. Examiner's Answer	05/29/98
29. Reply Brief (3)	06/29/98
30. Letter	07/20/98
31. Supplemental Reply Brief (3)	08/03/98
32. Notice of Correction of Appeal Brief	09/25/98
33. Remand to Examiner	10/09/98
34. Letter	10/23/98
35. Decision Board - Affirmed	07/27/01
36. Request for Reconsideration	08/20/01
37. Rehearing Denied	12/11/01
38. Appeal to Federal Circuit	01/21/02

The date stamp of the United States Patent Office on this postcard will indicate receipt of:

- 1) Petition to the Commissioner -- 37 C.F.R. 1.181 with a Certificate of Mailing on the last page, and
- 2) Declaration of Dr. Mitchell Swartz Supporting Petition
- 3) This postal card for the stamp of the Post Office



Thank you: Mitchell R. Swartz  
S/N 08-406,457 [3/20/1995]  
Mailed: June 29, 1997

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- 2) with a Certificate of Mail on the last page, and

This postal card for the stamp of the Post Office;  
Thank you: Mitchell R. Swartz



S/N 08-406,457 [3/20/1995]  
Mailed: July 1, 1997

The date stamp of the United States Patent Office on this postcard will indicate receipt of the following:

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Thank you: Mitchell R. Swartz      Serial no: 08/406,457  
[3/20/95]

Mailed: July 18 1997

A10



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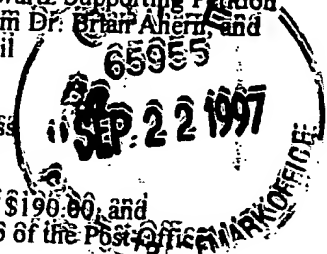
- 1) IN TRIPLICATE an "APPEAL BRIEF" with a Certificate of Mailing on the last page, and containing an Appendix A, and B containing the claims of record
- 2) Declaration of Dr. Mitchell Swartz Supporting Petition
- 3) containing herein a letter from Dr. Brian Ahern, and a letter from Dr. Ray Kurzweil
- 4) Declaration of Dr. Mallove
- 5) Declaration of Hal Fox
- 6) Declaration of Dr. Robert Bass
- 7) Declaration of Gayle Verner
- 8) Declaration of Dana Rotegard
- 9) A check (# ) in the amount of \$190.00, and
- 10) This postal card for the stamp of the Post Office

Thank you, Mitchell R. Swartz

Serial No.: 08 106,457

Mailed: September 16, 1997

Filed: 3/20/1995



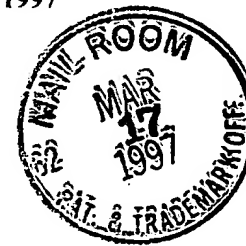
The date stamp of the United States Patent Office on this postcard indicate receipt of the following:

- 1) Response of Applicant with a Certificate of Mailing on the last page
- 2) Forms listing References PTO 1449 (modified)
- 3) References including IDS
- 4) This postal card for the stamp of the Post Office

Thank you, Mitchell R. Swartz

Serial no: 08/406,457 [3/20/9]

Mailed: March 12, 1997



The date stamp of the United States Patent Office on this postcard will indicate receipt of:

- 1) Response To Communication From Examiner

Dated May 12, 1997

- 2) with a Certificate of Mail on the last page, and
- 3) References including IDS
- 4) Petition And Certification Pursuant To 37 CFR 1.97
- 5) Forms 1440 to the Examiner regarding the above

This postal card for the stamp of the Post Office:

Thank you, Mitchell R. Swartz

S.N 08-406,457

Mailed: May 26, 1997



All

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- 3) This postal card for the stamp of the Post Office



Thank you: Mitchell R. Swartz  
S/N 08-406,457 [3/20/1995]  
Mailed: June 29, 1997

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This postal card for the stamp of the Post Office,  
Thank you: Mitchell R. Swartz



S/N 08-406,457 [3/20/1995]  
Mailed: July 1, 1997

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- 2) a Certificate of Mailing on the last page
- 3) A check (#384) in the amount of \$190; and
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Thank you: Mitchell R. Swartz      Serial no: 08/406,457  
[3/20/95]

Mailed: July 28 1997

A12



The date stamp of the United States Patent Office on this postcard will indicate receipt of the following for the BOARD:

- 1) IN TRIPLICATE an "APPEAL BRIEF" with a Certificate of Mailing on the last page, and containing an Appendix A and B containing the claims of record
- 2) Declaration of: L. R. Mitchell Swartz Supporting Petition
- 3) containing the claim in a letter from Dr. Brian Ahern, and a letter from Dr. Ray K. Zweil
- 4) Declaration of Dr. Mallove
- 5) Declaration of Dr. Fox
- 6) Declaration of Dr. R. R. Mass
- 7) Declaration of Dr. Gayle
- 8) Declaration of Dana R. McGard

10) This postal card for the stamp of the Post Office

Thank you: Mitchell R. Swartz

Serial No.: 08-406,457

Filed: 3/20/1997

Mailed:

Nov. 8, 1997

The date stamp of the United States Patent Office on this postcard will indicate receipt of the following for the Board:

1) IN TRIPLICATE

Appellant: "Second Reply Brief To The Office's Reply Brief (Paper #30)"

with a Certificate of Mailing on the last page

2) This postal card for the stamp of the Post Office

Thank you: Mitchell R. Swartz

Serial No.: 08-406,457

Filed: 3/20/1995

Mailed: July 29, 1998

The date stamp of the United States Patent Office

on this postcard will indicate receipt of:

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- 2) This postal card for the date stamp of the Post Office

Thank you: Mitchell R. Swartz

S.N.: 08-406,457 3/20/1995

Mailed: September 30, 1998

A13

STATEMENT										U.S. PATENT DOCUMENTS									
REFERENCE DESIGNATION										U.S. PATENT DOCUMENTS									
EXAMINER INITIAL		DOCUMENT NUMBER						DATE	NAME	CLASS	SUB CLASS	FILING DATE							
	AA																		
	AB																		
	AC																		
	AD																		
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FOREIGN PATENT DOCUMENTS																			
EXAMINER INITIAL		DOCUMENT NUMBER						DATE	COUNTRY	CLASS	SUB CLASS	TRANS LATION							
	AL																		
	AM																		
	AN																		
	AO																		
	AP																		
OTHER ART (including Author, Title, Date, Pertinent Pages, Etc.)																			
	AR								Swartz, M.; "The Relationship between Input Power and Enthalpic Behavior of Nickel Cathodes During Light Water Electrolysis"; submitted to <i>Fusion Technology</i> ; (1995).										
	AS																		
	AT																		
EXAMINER									DATE CONSIDERED										
EXAMINER: Initial if reference considered; whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of form with next communication to applicant.																			

Exhibit 1  
APPEAL FROM THE  
UNITED STATES PATENT  
OFFICE

[(\*\*\*) later published as Swartz, M.; 1997;  
*Fusion Technology*, 31, 63-74]

• Appeal No. 98-2593

A14



PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT				FILING DATE: 3/20/1995		GROUP ART UNIT: 2204	
REFERENCE DESIGNATION				U.S. PATENT DOCUMENTS			
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME		SUB CLASS	FILING DATE
	AA						
	AB						
FOREIGN PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY		SUB CLASS	TRANSLATION
	AC						
OTHER ART (including Author, Title, Date, Pertinent Pages, Etc.)							
	AD						Storms E, Talcott C; Fusion Technol. 17 (1990) 680: Electrolytic tritium production.
	AE						Swartz, "Fusions in Nuclear Reactions in Solids"; Fusion Technology to be published March 1997, Vol 31, 228-236 (1997).
	AF						Swartz, "Consistency Of The Biphasic Nature Of Excess Enthalpy In Solid State Anomalous Phenomena With The Quasi-1-Dimensional Model Of Isotope Loading Into A Material"; Fusion Technology, 31, 63-74; January 1997 Issue (1997).
	AG						Swartz, Relative Impact of Thermal Stratification; JNE1,2; 141-143 (96)
	AH						Swartz, "Possible Deuterium Production From Light Water Excess Enthalpy Experiments Using Nickel Cathodes"; Journal of New Energy, 1, 3, 68-80 (1996)
	AI						Swartz, "Potential for Positional Variation in Flow Calorimetric Systems"; Journal of New Energy, 1, 126-130 (1996)
	AJ						Swartz, "Improved Calculations Involving Energy Release Using A Buoyancy Transport Corrections"; Journal of New Energy, 1, 3, 219-221 (1996)
	AK						Swartz, "Definitions Of Power Amplification Factor"; J New Energy, 2, 54-59 (1996)
	AL						Swartz, "Codeposition Of Palladium And Deuterium"; submitted to Fusion Technology
	AM						Swartz, "Relationship between ..."; submitted to Fusion Technology (1995)
	AN						Swartz, "A Method To Improve Algorithms Used To Detect Steady State Excess Enthalpy"; M. Swartz; Transactions Of Fusion Technology, Vol 26, Pp 156-159, (Dec. 1994)
	AO						Swartz, "Some Lessons From Optical Examination Of The Pic Phase-II Calorimetric Curve"; Vol. 2, Proceedings: "Fourth International Conference On Cold Fusion", Sponsored by EPRI And The Office Of Naval Research, December (1993); Published July 1994
	AP						Swartz, "Generalized Isotopic Fuel Loading Equations"; "Cold fusion source book: International Symposium on Cold Fusion and Advanced Energy systems"; Ed. Hal Fox; Minsk, Belarus, May (1994).
	AQ		previously submitted				Swartz, "Isotopic Fuel Loading Coupled to Reactions at an Electrode"; Transactions of Fusion Technology, Vol 26, pp 74-77; (Dec. 1994)
EXAMINER				DATE CONSIDERED			
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of form with next communication to applicant.							

Exhibit 2  
APPEAL FROM THE  
UNITED STATES PATENT  
OFFICE

♦ Appeal No: 98-2593

A15

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE THE APPLICATION OF:

PAPER:

Inventor : Mitchell R. Swartz  
 Serial No.: 08-406,457  
 Filed: 3/20/1995

Group Art Unit: 2204  
 Examiner: Daniel Wasil

## ADDENDUM

Exhibit 1 - Letter from Dr. Miles, May 20, 1998
Exhibit 2 - Miles, M.; "Reply to Examination of Claims of Miles et al. in Pons-Fleischmann-Type Gold Fusion Experiments"; <i>J. Physical Chem B.</i> ; 102, 18, 3642-3646 (1998)
Exhibit 3 - Swartz, M.; 1998; "Optimal Operating Point Characteristics of Nickel Light Water Experiments"; <i>Proceedings of ICCF-7</i> , to be released July 1998.
Exhibit 4 - Swartz, M.; 1998; Improved Electrolytic Reactor Performance Using $\pi$ -Notch System Operation and Gold Anodes; <i>Transactions of the American Nuclear Association</i> , Nashville, Tenn 1998 Meeting; (ISSN:0003-018X published LaGrange, Ill) 78, 84-85.
Exhibit 5 - <i>Transactions of American Nuclear Society</i> , June 7, 1998; pages 82-92
Exhibit 6 - Dr. Swartz's badge as Speaker and Conference Chair at the American Nuclear Society, June 7, 1998
Exhibit 7A - Miller, B.; Department of Energy Official Listings
Exhibit 7B - Miller, B.; Radio Pulsar Emission from Closed and Filled Magnetospheric Spells; <i>Astrophysical Journal</i> ; 464, 359-363 (1996).
Exhibit 8 - The 7th International Conference on Cold Fusion; Rohwell, J.; <i>Infinite Energy</i> ; 4; 19; 22-31 (confer especially page 29)
Exhibit 9 - The Office Transfers Secret Applications to China (confer especially page 4)
Exhibit 10 - The Office's Supervisory Department Transfers Missile Technology to China
Exhibit 11 - Report: O'Leary Says Whistle-Blowers Do Face Retrial
Exhibit 12 - Motorola Related

\*\*\*\*\* Updates to Swartz, M.; 1997, *Fusion Technology*,  
 31, 63-74]

Exhibit 9  
 APPEAL FROM THE  
 UNITED STATES PATENT  
 OFFICE

♦ Appeal No: 98-2593

AK6

November 7, 1997

Examiner Daniel Wasil  
Office of Patents and Trademarks  
Washington, D.C. 20231

Dear Mr. Wasil:

Thank you for your assistance. We are very disappointed that the supplied Appendix was removed from the Appeal Brief file following its receipt in the Office. Exhibit A (attached) demonstrates that it was received by the Office. This fact of something being actually delivered to the Office, but then ignored, is similar to the previous "lost" checks (which were actually cashed by the Office). This pattern of capricious actions by the Office again gives the salient appearance of both retaliation, and impropriety, by the Office. In my opinion, the Office has not only been disrespectful to me, but dishonest as well.

As required, Exhibit B shows that the check required for the Appeal Brief was previously delivered (confer also Exhibit A, also demonstrating previous receipt of said check by the Office).

As required, enclosed in triplicate are the Appeal Briefs with Appendices now attached to each one to minimize the chance that they might be removed again.

Sincerely,



Exhibit 6  
APPEAL FROM THE  
UNITED STATES PATENT  
OFFICE

♦ Appeal No. 98-2593

A17

**Table 1 - Tabulated Response of Multiply-Submitted  
Peer-Reviewed Exhibit (\*) to the Patent Office and the Board**  
 [(\*)Swartz. M., 1997, *Fusion Technology*, 31, 63-74]

Missive Number	Date Sent	Form of peer-reviewed article	Where Discussed Therein	Result by PTO	Result by Board	Proof of Receipt
1	3/15/95	Prepublication with original specification and claims	Form 1440 Exhibit 1	"Lost", as Admitted by Examiner Wasil on 12/96	Ignored	Postcard, Stamp of PTO (not shown)
2	3/12/97	Replacement With Post-Publication Copy Sent to Examiner Wasil (see also Exhibit 6)	In letter, and in Response in Averments 6,7 discussed on pages 50-51, Also Form 1440 Exhibit 2	"Lost", as admitted by Examiner Wasil in telephone call "typically left in" [4/17/97 at 3 PM]	Ignored	Postcard, Stamp of PTO in Exhibit 3
3	5/26/97	Second Replacement Copy Of Post-Publication Article	In Response on pages 2, 3, Also Form 1440	"Lost"	Ignored	Postcard, Stamp of PTO in Exhibit 4
4	9/16/97	Third, Fourth, Fifth Replacement Copies Of Article send to Board As part of Appendix	Discussed in Appeal Brief including on pages 47, 57	"Lost" with entire Appendix, admitted by the Examiner	Ignored	Postcard, Stamp of PTO in Exhibit 5
5	11/08/97	Sixth, Seventh, Eight Replacement Copies Of Article send to Board As part of Appendix	Discussed in Retyped Appeal Brief including on pages 47, 57	"Lost" with entire Appendix, admitted by the Examiner	Ignored	Postcard, Stamp of PTO in Exhibit 7
6	11/27/97	Ninth, Tenth, Eleventh Replacement Copies Of Article Sent To Board, One In Each Brief -Triplicate	As part of Appendix	Ignored by the Board	Ignored	Postcard, Stamp of PTO (not shown)
7	6/25/98	Twelfth, Thirteen, And Fourteenth Replacement Copies Of Article Included with Reply Brief which also contained followup articles, One In Each Reply Brief In Triplicate	Discussed in Reply Brief including on pages 1-4 with respect to systematically missing documents.	Ignored by the Board	Ignored	Postcard, Stamp of PTO in Exhibit 8

## The Exhibits Sent To Office By Appellant (Then Applicant)

02 - 1240

(Serial No.: 08-406,457)

[(\*) Appellant has several cases before the Board with substantial literature. As the United States Board of Customs and Patent Appeals stated:

**"An original specification can also incorporate by reference subject matter disclosed in another patent application which is pending before the Patent Office and hence unavailable to the public."**

[In re JOLLES; United States Board of Customs and Patent Appeals, 1980, 628 F.2d, 1322, 206 USPQ 885]].

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

IN RE THE APPLICATION OF:

Inventor : Mitchell R. Swartz  
Serial No.: 08-406,457

Filed: 3/20/1995

For: **APPARATUS TO DETERMINE  
THE ACTIVITY OF A SAMPLE  
LOADED WITH ISOTOPIC FUEL**

PAPER:

Group Art Unit: 2204

Examiner: Daniel Wasil

September 16, 1997

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**DECLARATION OF DR. MITCHELL SWARTZ  
SUPPORTING APPEAL BRIEF**

I, Mitchell R. Swartz, declare that I am a citizen of the United States of America and the inventor of the invention described in the above-identified application.

1. There are several serious misstatements in the communications from the Office.
2. The Examiner's Answer has not responded to several important issues in the supplied Declarations.
3. Contrary to the Office's unfounded claim, positive reports of cold fusion has appeared from various groups including the U.S. Navy, the French Atomic Energy Agency, NASA, the Los Alamos National Laboratory and scores of other laboratories. Nuclear products are created in cold fusion reactions; for example helium-4 production from palladium properly loaded with deuterium.

4. The Office challenges Dr. Miles' work regarding helium production by these reactions. It is important to understand, however, that he designed and implemented adequate controls in his experiments at China Lake (US Navy). Near commensurate "ash" consistent with a nuclear process was found linking the formation of helium-4 to the excess heat using metal flasks which were used to capture the helium-4 linked to the excess heat.

5. The Office is wrong when it states that no positive results are seen with high loading ratios. In fact, my published article ["Phusons in Nuclear Reactions in Solids"; *Fusion Technology*, March 1997, 31, 228-236 (1997)] demonstrates that there is a quadratic dependence upon the loading above a certain value for palladium loaded with deuterium.

6. My invention is operable and the results have been published in peer reviewed journals, including *Fusion Technology* which is published by the American Nuclear Society. One of my recent papers with results demonstrating operability is "Consistency of the Biphasic Nature of Excess Enthalpy in Solid State Anomalous Phenomena with the Quasi-1-Dimensional Model of Isotope Loading into a Material"; *Fusion Technology*, 31, 63-74, January 1997 issue (1997), M. Swartz. Another is "Biphasic Behavior In Thermal Electrolytic Generators Using Nickel Cathodes"; M. Swartz, *IECEC-97 Conference on to Conversion Technologies*, July (1997). Another is "Codeposition Of Palladium And Deuterium"; M. Swartz, *Fusion Technology*, 32, 126-130 August 1997.

7. This field is alive and well despite the opinion purported by some in the US Patent Office. For example there is an *IECEC-97 Conference on to Conversion Technologies*, July (1997) which will feature cold fusion results by two groups in the US Navy, and other groups including the article "Biphasic Behavior In Thermal Electrolytic Generators Using Nickel Cathodes"; M. Swartz. A copy of the program and a preprint of the paper is included with this Declaration.

8. Although the examiner claims that no one in the field publishes negative results. This is false. I personally have published negative reports looking for metachronous particle emissions [M Swartz, "Possible Deuterium Production from Light Water Excess Enthalpy Experiments Using Nickel Cathodes", *Journal of New Energy*, 1, 3, 68-80 (1996)].

9. I have published extensively on errors and noise in cold fusion systems, and on other artifacts which can give rise to false indications of "excess heat" [Noise in Cold Fusion



Systems", to be published in *J. New Energy* for Fall 1997; Swartz, "Improved Calculations Involving Energy Release Using A Buoyancy Transport Corrections", *Journal of New Energy*, 1, 3, 219-221 (1996); Swartz, "Potential for Positional Variation in Flow Calorimetric Systems", *Journal of New Energy*, 1, 126-130 (1996)]; Swartz, "Definitions Of Power Amplification Factor", *J New Energy*, 2, 54-59 (1996); Swartz, "Explanations for Differences Between Reports of Excess Heat in Solid State Fusion Reactions", *J. New Energy*, 2, (1997); Swartz, "Relative Impact of Thermal Stratification", *J. New Energy*, 1, 2, 141-143 (96)); Swartz, "Some Lessons From Optical Examination Of the PFC Phase-II Calorimetric Curve", Vol. 2, Proceedings: "Fourth International Conference on Cold Fusion", sponsored by EPRI and the Office of Naval Research, December (1993), published July 1994).

10. Fleischmann and Pons describe a calorimeter featuring two compartments and thus uses the most simple and conventional calorimetry, as has been taught since Newton first described his approximation. The Office's statement that Pons and Fleischmann do not teach concentric chambers, any Q1D model, or waveform reconstruction is correct. Fleischmann and Pons do not teach more than two compartments, nor the other features as taught in the present application.

11. As taught in the above-entitled application, the single compartment theory as taught in Fleischmann and Pons is insufficient for the most accurate calorimetry. Fleischmann and Pons do not teach the more than two compartments, nor the method of calculating enthalpy as discussed in the original specification of the above-entitled application, nor any of the other features as taught in the present application. Fleischmann and Pons do not include terms discussed in the original specification of the above-entitled application and therefore have, individually or together, a completely different configuration, model, and system. The preferred embodiment of the present invention, not to demean any other aspect of said invention, involves liquid filled rings three or more in number, and inclusion of terms involving  $T_1 + T_2$  as taught in the original specification of the above-entitled application. This is different from Pons and Fleischmann.

12. The present application specifically models the barrier walls as being equivalent to  $T_1$  plus  $T_2$ , after measurement of the liquid temperatures in each ring. These higher order



corrections and said more than two concentric chambers, their fluid filling, derivations of wall temperature distributions using  $(T_1 + T_2)/2$  as taught in the above entitled application; are not taught in Fleischmann and Pons.


13. In the present application, the waveform reconstruction is taught and uses a control. It is not taught in Fleischmann and Pons. Fleischmann and Pons do not find an optimum drive condition of a sample as described in the original specification of the above-entitled application; and drive said sample at said optimum drive condition.

14. 2. This field is real despite the reluctance and resistance of the Office to admit it. Declarations and letters from Dr. Miles, Mr. Fox, Dr. Mallove, Dr. Kurzweil, Dr. Ahern, Dr. Bass, Ms. Verner, Mr. Rotegard, and others, are attached.

I declare that all statements herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signature of Inventor:

Date: September 16, 1997

  
Mitchell R. Swartz, Appellant  
Weston, Massachusetts 02193  
(617)237-3625

RESPONSE UNDER 37 CFR 1.116  
EXPEDITED PROCEDURE - EXAMINING GROUP NUMBER 2204  
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE THE APPLICATION OF:

Inventor : Mitchell R. Swartz  
Serial No.: 07/ 339,976  
Filed: 04/18/1989  
SYSTEMS TO INCREASE THE EFFICIENCY,  
CONTROL, SAFETY AND ENERGY  
UTILIZATION OF ELECTROCHEMICALLY

PAPER:

Group Art Unit: 2204

Examiner Anthony Chi

April 17, 1996

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

DECLARATION of ROBERT W. BASS, M.A. Oxon, Ph.D.

I, the undersigned Robert W. Bass, declare that I am a citizen of the United States of America.

1. I am an Inventor of U.S. Patents 4,235,668 (issued Nov. 25, 1980), 4,236,964 (issued December 2, 1980) and 4,448,743 (issued May 15, 1984). I have also served as a Registered Patent Agent [29,130] with 18 years of experience in the practice of patent law before the PTO. This includes one year (1993) as a full-time Associate with the Intellectual Property Law firm of Poms, Smith, Lande & Rose in Century City, California, and a seventeen year practice as an avocation or part-time profession.

2. I am aware of this field both because I have continued to read the literature, because of my "hot" fusion inventions, because of my more recent QRT Cold Fusion invention [subject of a pending application filed in 1991], and because I have actually both personally drafted and submitted several cold fusion applications for, and also read numerous cold fusion applications by, other inventors who have submitted to the Patent Office. My "hot" fusion inventions include the Topolotron and the Plasmasphere which were issued patents.

A32

3. I, myself, as well as several collaborators in my fusion plasma confinement research and in my nuclear fusion reaction-rate equilibrium-stability optimization research have published many papers. These were published in both the *Proceedings of the Utah Academy of Arts & Sciences* and in the leading archival "hot" fusion journals, such as the APS "*Physics of Fluids*", the IEEE "*Transactions on Plasmas Science*," and the American Nuclear Association "*Fusion Technology*". My inventions have been written up at length in the leading treatises on this subject, including Tom Dolan's 3-volume book "Fusion Research" and Reece Roth's book "Fusion Energy".

4. Academically, I have served on the Theoretical Division of Project Matterhorn at the Princeton Plasma Physics Lab ("hot" fusion) in 1957-59, and more recently have been a Professor of Physics & Astronomy at BYU (1971-81) and a Prof. of Aerospace Engineering Sciences at the U of Colorado, and of EE at UCLA (visiting Faculty member, 1986-87), and of Systems Engineering at the West Coast University.

5. Ever since the first patent applications on so-called "cold" fusion (or lattice-catalyzed low-energy nuclear fusion) I have noticed what has the appearance of an appalling pattern of deliberate conduct on the part of the Examiners in Art Group 220 and their supervisor, Mr. Garret. Before I had even met Dr. Swartz, and before I had even filed a "cold" fusion patent, I had complained verbally to Mr. Garret about the numerous inconsistencies in his Examiners pertaining to their treatment of "cold" fusion patent applications. Mr. Garret replied to me with what in retrospect appears to have been some brazen misstatements. Here are just two examples.

6. First, Mr. Garrett said that perhaps the PTO library did not subscribe to various technical journals cited by the "cold" fusion applicants, although a subsequent phone call to the PTO verified that every single one of the journals in question was in fact either subscribed to by, or maintained by, or located in, the PTO library.

7. Second, Mr. Garret vigorously - and with seeming plausibility - absolutely denied that there was any special "policy" pertaining to the handling of "cold" fusion patents. Mr. Garret claimed that each and every Examiner under him was acting on his own independent judgment without regard to any categorization. This erroneous claim appears to be contradicted by the Annual Report which was issued by Commissioner Lehman after his first year in office. Said Annual Report referred explicitly to "cold" fusion as an "emerging technology" and stated

that there were some 400 applications in that category still pending and that none had yet been acted upon.

8. It now appears that this inaction is in contrast to the European Economic Community which will issue the Fleischmann-Pons patents, based upon the recent public statements by the European patent authorities. Japan is reported to have issued more than 100 Cold Fusion patents.

9. I have read the Notice from the Examiner Chi to Dr. Swartz dated March 29, 1996. In my opinion, the Examiner is in error in paragraph 1, claims must not be "patentably distinct", but "materially distinct" as Dr. Swartz has attempted to explain within the papers associated with above-entitled application.

10. With respect to these series of applications, there does not seem to be a genuine attempt to follow the directives of the Appeal Board to provide Dr. Swartz with a substantive response to the Briefs and Declarations already submitted.

11. There is a pattern of behavior here. I have read many complaints on the Internet by disgruntled "cold" fusion patent applicants, most of whom complain of the same things. These individuals appear to have independently arrived at the same and probably only possible conclusion -- that there is an organized effort under Art Group 220 to delay, obstruct, obfuscate, harass, hinder, and otherwise retard the issuance of patents in this category.

12. These efforts to delay and obstruct include examples of intellectual dishonesty in patent papers which I have examined in this field, and which attempted only to go through this Art Group.

13. In contrast to what I believe may be an abnormal pattern, I have seen cold fusion patents in the same field issue, but these were examined by OTHER Art Groups. Unlike this Art Group, those applications which were prosecuted before other art groups were issued.

14. Further consistent with this abnormal pattern, the PTO has issued, and continues to regularly issue, patents which purport to disclose how to nullify gravity or to attain an "anti-gravity" device. In fact, at last count, there were scores of such patents issued, all apparently with no difficulty. These devices do not work, while "cold fusion" does, as one can regularly read about its success in many research articles.

15. There is a lot wrong with this. Here are two problems. First, it is now well-known to, and generally believed by, the scores of inventors in the Cold Fusion field that the ONLY way to

get fair treatment from the PTO is to word the patent application in such a way that the application does NOT get sent to Art Group 220.

16. Second, in this field, some applicants of inventions submitted to the Office avoid mentioning Drs. Fleischmann & Pons and even the words "cold" fusion. In my opinion, this is wrong, and is both inconsistent with, and a dereliction of duty from, the PTO's Canons of Professional Responsibility. The Office should never encourage, even implicitly, any lapse of the applicants' obligation of complete "candor". Any such application in this field should provide a full and complete citation of Drs. Fleischmann & Pons' work as prior related art.

17. In my opinion, the Appeals Board should ask Commissioner Lehman, as well as the Inspector Generals of both the General Accounting Office and of the PTO to initiate a serious, rigorous investigation into the conduct of Art Group 220. One should not forget that Admiral Short was Court Martialed for Dereliction of Duty for being asleep on his watch during Pearl Harbor.

I declare that all statements herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Respectfully submitted,

*Robert W. Bass*

April 17, 1996

Signature of Declarant:

Dr. Robert W. Bass

Registered Patent Agent 29,130

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A35

RESPONSE UNDER 37 CFR 1.116  
EXPEDITED PROCEDURE - EXAMINING GROUP NUMBER 2204

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE THE APPLICATION OF:

Inventor : Mitchell R. Swartz  
Serial No.: 08-406,457

Filed: 3/20/1995

For: **APPARATUS TO DETERMINE  
THE ACTIVITY OF A SAMPLE  
LOADED WITH ISOTOPIC FUEL**

PAPER:

Group Art Unit: 2204

Examiner: Daniel Wasil

September 16, 1997

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**DECLARATION OF GAYLE VERNER  
SUPPORTING APPEAL BRIEF**

I, Gayle Verner, declare that I am a citizen of the United States of America.

1. My field of experience is that of a journalist and educator. I am a nationally published reporter who has written extensively in many fields such as science and medicine, including energy conversion. I have earned the degree of Master in Education from the Harvard Graduate School of Education. For the past eighteen (18) years I have been a journalist, primarily for a Time, Inc. publication (*People Magazine*), *American Health Magazine*, the *Cold Fusion Times*, and have researched many articles for other national and regional journals, newspapers, and newsletters. I make the following statements independently and not as a representative of any publication.

2. I have conversed, and/or interviewed with a number of individual scientists in the field of cold fusion including such major contributors as Dr. Martin Fleischmann, Dr. Melvin Miles, Prof. Peter Hagelstein, Dr. Eugene Mallove, Dr. George Miley, Dennis Cravens, Prof. John Bockris, Hal Fox, Prof. Keith Johnson, Dr. Brian Ahern, Dr. Edmund Storms and Dr. Mitchell Swartz. I have closely followed this field and the breaking news in it since 1990.

3. Contrary to the Office's misguided claim, positive results and reports of cold fusion successes have continued to mount.

4. I have witnessed Dr. Swartz operate his equipment in front of visitors to the laboratory including Professors Louis Smullin and Keith Johnson from MIT and others. Dr. Swartz has presented and published his data and findings to peer-reviewed scientific technical journals.

5. It has been my observation that the U.S. Patent Office has not used due diligence in their review of much of the material sent to them by Dr. Swartz.

I declare that all statements herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: September 16, 1997

  
Gayle Verner

Post Office Address: P.O. Box 81135  
Wellesley Hills, MA 02181

**United States Court Of Appeals For The Federal Circuit**

**02 - 1240  
(Serial No.: 08-406,457)**

**IN RE MITCHELL R. SWARTZ**

**Appeal from the Board of Patent Appeals and Interferences  
(No. 98-2593)**

**Petition For Panel Rehearing**

**Dr. Mitchell Swartz, *pro se*  
P.O. Box 81135  
Wellesley Hills, MA 02481**

**November 15, 2002**



## **(2) CERTIFICATE OF INTEREST [Pursuant Rule 47.4]**

**Appellant, *pro se*, certifies the following:**

**1. The full name of every party or amicus represented by me is:**

**Mitchell R. Swartz, ScD, MD, EE, *pro se***

**2. The name of the real party in interest represented by me is:**

**Mitchell R. Swartz, ScD, MD, EE, *pro se***

**3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are: NONE**

**4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this court are: NONE**

### **(3) TABLE OF CONTENTS**

**United States Court Of Appeals For The Federal Circuit**

**02 - 1240**

**(Serial No.: 08-406,457)**

<b>(2) Certificate of Interest pursuant (Rule 47.4)</b>	<b>i</b>
<b>(3a) Table Of Contents</b>	<b>ii</b>
<b>(3b) Table Of Authorities</b>	<b>v</b>
<b>(4) The Points Of Law Or Fact Overlooked Or Misapprehended By The Panel Of The Court</b>	<b>1</b>
<b>(4A) Specific Points Of Law Or Fact Overlooked Or Misapprehended By The Panel Of The Court</b>	<b>2</b>
<b>The Decision Fails To Describe The Written Description Of '457</b>	<b>2</b>
<b>Enablement Is Supported By Submitted And Received Probative Reference</b>	<b>3</b>
<b>Declarants And The Silenced Amicus Curiae Proved Operability And Utility</b>	<b>4</b>
<b>The Decision Ignores That Appellees' Own Witnesses Dispute Them</b>	<b>5</b>
<b>The Decision Ignores That Exhibits And Declarations Have Not Been Docketed</b>	<b>6</b>
<b>(4B) Points Of Law Overlooked Or Misapprehended</b>	<b>7</b>
<b>(5) The Argument In Support Of A Rehearing</b>	<b>13</b>
<b>(6) Decision - Attached As Addendum</b>	<b>16</b>
<b>(7) Certificate Of Service (Rule 25 (d))</b>	<b>15</b>
<b>(8) Certificate Of Mailing</b>	<b>15</b>

### (3) TABLE OF AUTHORITIES

02 - 1240 (Serial No.: 08-406,457)

<u>Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics</u>	Page 12
<u>Chelebda v. H.E. Fortuna &amp; Brothers, Inc.</u> 609 F.2d 1022 (1st Cir. 1979)	8
<u>Chisum on Patents</u> , 4.04[4] [1983]	7,13
<u>Cross v. Iizuka</u> , 753 F.2d 1040, 1044 n.7, 224 USPQ 739, 742 n.7 (Fed. Cir. 1985)	9
<u>Diamond v. Chakrabarty</u> 447 U.S. 303 (1980), 447 U.S. 303, No. 79-136, quoting DeepSouth Packing Co. v. Laitram Corp., 406 U.S. 518, 530-531 (1972)	11
<u>Duncan v. Louisiana</u> , 88 S.Ct. 1444	12
<u>E.I. du Pont de Nemours &amp; Co. v. Berkley &amp; Co.</u> , 620 F.2d 1247, 1258 n.10, 1260 n.17, 205 USPQ 1, 8n10, 10n.17 (8th Cir. 1980)	7,13
<u>Ex parte Gray</u> 10 USPQ2d 1922, 1928 (Bd. Pat. App. & Inter. 1989)	10
<u>Ex parte Porter</u> 25 USPQ2d 1144, 1147 (Bd. of Pat. App. & Inter. 1992)	9
<u>Frontiero v. Richardson</u> , 93 S.Ct. 1736, 411 U.S. 677	12
<u>Gamez v. Toledo</u> , 42 U.S.C. §1983	12
<u>Gass v. Lopez</u> , 95 S. Ct 729	12
<u>Griffin v. Breckenridge</u> , 91 S Ct 179D	12
<u>In re Brana</u> , 51 F.3d 1560, 1564 n.12, 34 USPQ2d 1436, 1439 n.12 (Fed. Cir. 1995)	8,10
<u>In re Chilowsky</u> 43 CCPA 775, 229 F.2d 457, 108 USPQ 321 (1956)	7
<u>In re Eltgroth</u> , 419 F.2d 918, 164 USPQ 221 (CCPA 1970)	8
<u>In re Ferens</u> 417 F.2d 1072, 1074, 163 USPQ 609, 611 (CCPA 1969)	9

<u>In re Gazave</u> , 54 CCPA 1524, 379 F.2d 973, 154 USPQ 92 (1967)	7
<u>In re Irons</u> 52 CCPA 938, 340 F.2d 974, 144 USPQ 351 (1965)	8
<u>In re Marzocchi</u> , 439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971)	10
<u>In re Morris</u> 127 F.3d 1048, 1053-56, 44 USPQ2d 1023, 1027-30 (Fed. Cir. 1997)	9
<u>In re Oetiker</u> 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992)	7,10
<u>In re Swartz</u> [00-1107, 00-1108]	3
<u>In re Vaeck</u> 947 F.2d 488, 495-96, 10 USPQ2d 1438, 1444 (Fed. Cir. 1991)	7
<u>In re Wands</u> 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988)	8
<u>In re Ziegler</u> 992 F.2d 1197, 1200, 26 USPQ2d 1600, 1603 (Fed. Cir. 1993)	3
<u>In re Zurko</u> 142 F.3d 1447, 1449, 46 USPQ2d 1691, 1693 (Fed. Cir.), <i>cert. granted</i> , 119 S. Ct. 401 (1998)	6
<u>Krantz and Croix v. Olin</u> , 148 USPQ 659, 661-62 (CCPA 1966)	7,13
<u>Lewis v. Bours</u> , 119 Wn.2d 667, 670, 1992	9
<u>Marino v. Hyatt Corporation</u> , 793 F.2d 427, 430 (1st Cir. 1986)	8
<u>Mayberry v. Penna.</u> , 91 S.8.	12
<u>Morrill v. Tong</u> , 390 Mass. 1207 129 (1983)	8
<u>Raytheon Company V. Roper Corporation</u> , U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592	7,8,9,13
<u>Standard Oil Co. (Indiana) v. Montedison</u> , S.P.A., 664 F.2d 356, 375, 212 USPQ 327, 344 (3rd Cir. 1981), <i>cert. denied</i> , 456 U.S. 915, 102 S.Ct. 1769, 72 L.Ed.2d 174 (1982)	7,13
U.S. Rep volume 404, pages 520-521 (1972)	14
<u>United States v. Nixon</u> (1974)	11
<u>Weiss v. Weiss</u> , 436 N.Y.S. 2d. 862, 52 N.Y. 2d. 170 (1981)	12
<u>Wertheim</u> , 541 F.2d at 263, 191 USPQ at 97	7
<u>Wood v. Strickland</u> , 95 S Ct 932	12

#### **(4) The Points Of Law Or Fact Overlooked Or Misapprehended By The Panel Of The Court**

1. The Appellant received a DECISION dated 11/8/02 which affirmed the Board's decision for putative lack of enablement under 35 U.S.C. § 112, ¶1, and indefiniteness under 35 U.S.C. §101. The Appellant respectfully requests a rehearing on this matter, and presents herein significant points of law and fact overlooked or misapprehended by the court.

2. The Decision has statements which are directly contradicted by evidence already in the record. Importantly, the Decision is void of any discussion of any of the Declarations, which prove utility and enablement.

Importantly, the Decision is void of any discussion of the fact that Dr. Swartz did respond to the Office and rebut their unsupported notions. Specifically, confirming this, the Decision is void of any discussion of the eleven (11) date stamps of the Patent Office which prove submission and receipt of Appellant's peer-reviewed publication which proves utility and enablement at the time of the original filing.

Importantly, the Decision is void of any discussion of the submitted, but not docketed, Amicus Briefs which were refused by this Court for reasons unclear including possibly because they prove utility and enablement. It is unfortunate that while the USA is at War, the author(s) of the Decision have simply ignored the US Constitution and Congressional directive, and the multifaceted input to this case from members, present and retired, from three branches of the military, and those who have served DARPA. Because of the importance of judicial economy and before requesting aid from the US Supreme Court and web sites across the country, the Appellant respectfully requests a simple rehearing on this matter. The basis is the following and because the Amicus Curiae were silenced both by denial of a Hearing and by failure to docket their four (4) submitted Amicus Curiae Briefs, even though their input was acceptable to the Appellees.

#### **(4A) The Points Of Fact Overlooked Or Misapprehended**

*"In the instant case, the Board concluded that the record evidence supported the examiner's finding that Mr. Swartz's claims are directed to the accomplishment of an "unattainable result," ..."*

[Decision of 02-1240]

#### **The Truth - The Decision Fails To Describe The Written Description Of '457**

1. The Decision ignores the present invention ('457) which teaches a novel calorimeter (heat-measuring instrument) used to examine metal samples or thermal controls regarding the heat which they produce off when electricity is driven through them [A183 in '457, A72 in Swartz(97), A178; also A193-195, and A261-268].

Despite the normal standards of review, nothing in the Decision discusses the present invention. The novel calorimeter of '457 (and used in DARPA experiments and published in American Nuclear Society's journal PROVING enablement) is mentioned in the Decision zero (0) times. By contrast, the pejorative term "cold fusion" is mentioned fourteen (14)-times as the Decision attacks a US citizen, Dr. Mitchell Swartz, inventor, physician and engineer trained at MIT and Harvard, whose instrument and invention discussed and taught in '457 was used to measure data for DARPA. This discrimination by the Court is unfair to Appellant because in the record the Office admitted to what the invention is (A193-195). Thus, the Decision is contradicted by the record itself [Table 3 (A147)]. Corroborating this, the inventor is mistakenly called "Mr" in the Decision because the Decision elects to show neither respect for Dr. Swartz, science, the truth, the US Constitution, or even Congressional directive (*vide infra*).

2. This invention is not only about cold fusion, but a means to evaluate a sample's heat-producing activity. The Appellant, then Inventor, despite the Decision's false statement DID make a claim that the invention relates to other than cold fusion because it measures controls and inactive samples. The Decisions continual referral to "cold fusion" rather than '457 ignores Declarations and Exhibits including Swartz(97). First, this is prejudice and is systematic. Second, if the Court must rely upon reference to art cut of a cloth other than this specification and claims, then

its position must indeed be quite weak. The Appellant respectfully directs attention of the Court to the fact that the US is at War and the Court is systematically depriving the US of energy systems based upon false statements and reference to fraud.

The Office's false assertion that each invention of the applicant is "cold fusion" is not accurate, but is systematic prejudice. The Office, in this court [In re Swartz 00-1107], falsely called that invention, for measuring the loading of the hydrogen into a metal sample using a vibration of that sample [A345-347, A357], "cold fusion", too. The Office, in this Court [In re Swartz 00-1108], falsely called that invention, a two-step system to drive hydrogen diffusion in metals [A372-373, A387-388], "cold fusion", too. Like this case, the original specifications and claims were ignored.

*"... he Board determined that'... those skilled in this art would 'reasonably doubt' the asserted utility and operability of cold fusion."*

[Decision of 02-1240]

### **The Truth - Enablement Is Supported By Submitted And Received Probative Reference**

3. The record proves that Applicant came forward with solid substantial, and timely, evidence of operativeness and utility including Swartz(97) [A71, Swartz: M., 1997, Fusion Technology, 31, 63-74, hereafter "Swartz(97)"]; A71, but also see A83, A90). Swartz(97) [data, figures, graphs, and equations] is identical to what was taught in the original specification and claims on the date of the original filing. The preprint was included with the original specification. Swartz(97) proves that the present invention was operable at the time it was filed, and demonstrates validation. The record proves that Swartz(97) is listed on several Forms 1440 (A14, A10-A13), and was accompanied by Declarations declaring the Office was wrong and introducing the evidence, and explained how the article was relevant because it represented additional peer-reviewed substantial evidence supporting that, as of the March 20, 1995 filing date, a person with ordinary skill in the art would have been able to produce the multiring calorimeter and measure sample activity [A230-231, A258-259, A295-296, A301-303, A314-315, A335-336].

The record proves that Applicant submitted Swartz(97) to the Office eleven (11) times [A10-A13, Table 1 (A18)] in the expectation that it would be recorded, read and honestly considered and discussed. Instead, it was substantively ignored and repeatedly removed from the file [A197,A240,A323-325,A327-A330,A339]. Furthermore, Swartz(97) is not listed on the Office's first Docket (A3) or the revised second Docket (A6), nor is it listed --or substantively addressed-- in the Decision. In fact, the Office was Ordered to substantively respond to the key relevant issues (A145), but has not. One hypothesis is that this occurred because Swartz(97) is material and because comparison of it [A71] with the original specification [A148] demonstrates that the invention was correctly taught in the original specification and claims on the filing date of the application [validation].

#### **Declarants And The Silenced Amicus Curiae Proved Operability And Utility**

4. These Decision is unfair and disingenuous because it is rebutted by the unrebutted Declarants who stated that the measurement of activity has utility and proved that the present invention has operability. The Declarations were received [A10-A13, A18] and each Declaration was accompanied by statements supporting its introduction including full and explicit showing of good cause and sufficient reason why it was not presented earlier. Discussion of the Declarations was made in the Appeal Brief and Reply Brief to the Board as well as other responses to the Examiner [A198, A248-A249,256, 285-286,298, A319-320, A329, A334-335, A342-343, A358-360, A380-385]. Similar, the Amicus Curiae Briefs were received and ignored unfairly and against normal due process.

Attention of the Court, or future generations, is directed to the fact that the Declarants, observers skilled-in-the-art and of probative value, including Hal Fox (A44), Dr. Eugene F. Mallove, (A38), Gayle Verner (A36), Dana Rotegard (A47) Dr. Robert Bass (A32), Drs. Melvin Miles (A49), Brian Ahern (A50), Ray Kurzweil (A51), and Mitchell Swartz (A28), presented a showing that the present invention works as taught in the original specification and claims, and prove enablement at the time of filing. The Declarants also substantially, explicitly, and fully address and



rebut all matters, issues, and putative deficiencies cited by the Office and Board with solid substantive evidence. The Declarants state that the '457 has utility and that the Office's cited art has nothing to do with the Applicant's precise invention.

Dr. Scott Chubb (A52, 8/13/2001) said, "*'457 is an important, new device, whose purpose has value for measuring activity of a sample.*"

Dr. Hal Fox (A56, 8/13/2001) said, "*... the method of measuring the activity of sample in the above-entitled action is clever, not obvious, and is an important invention with utility*".

Dr. Eugene F. Mallove said (A58, 8/13/2001), "*The activity of a sample is an important issue and its measurement has great utility... The invention does not require the reproducibility of cold fusion phenomena... Rothwell actually praises ('457 stating) 'This could be a superb research tool...'*".

The Decision ignores this invention. Thus it cannot be determined from the record which - if any - of these submitted averments by the Declarant have been formally considered in the writing of the Decision. The Decision has not produced any relevant material substantive evidence to the contrary. The Declarations remain ignored with respect to their factual engineering content regarding operability and utility because they accurately and absolutely refute the Decision's erroneous statements and position.

#### **The Decision Ignores That Appellees' Own Witnesses Dispute Them**

5. Ignored in the Decision is that the Office's witnesses [including Dr. Rehn, Dr. Will, Dr. Schaffer (A55), and Rothwell (A61)] have turned on them regarding their notions of both the present invention and cold fusion. They directly refute and contradict the Office. The Appellee's own witness, Dr. Michael Schaffer (A55, 8/7/01) said, "*I do not see how anyone could construe anything that I wrote at Scientific American's site to imply that there is "no utility" in cold fusion, much less in instruments that might be used in cold fusion and other scientific*

*experiments. ... It appears that the Board of Patent Appeals considers me an expert on this subject. As an expert ... I would agree [Dr. Swartz's invention] ... does have utility".*

The Appellee's own witness, Mr. Jed Rothwell (cited in the Decision out-of-context, A61) said, *"None of my statements referred to the functionality, operability or performance of Dr. Swartz's multiring calorimeter. Nothing I have published or heard from scientists casts doubt on the claimed capabilities of Dr. Swartz's invention. ... I stated that it may well be a 'superb research tool'".*

The Appellee's citation of Dr. Michael McKubre reveals that actually said, *"For me ... perhaps the best report at this conference, was that of Mitch Swartz."* [Infinite Energy, 4, 20, 34-35, (98)].

The Appellee's own witness, Dr. Rehn, USNavy, said *"Perhaps the clearest scientific fact, at this time, is the hardest for physicists to accept: nuclear reactions apparently do occur in deuterium-loaded Pd, Ti, and probably in other solids."* [Office of Naval Research Asian Office, NAVSO P-3580, Vol. 18, Jan. 1993].

The Appellee's own witness, Dr. Will said, *"Significant positive results have been obtained (by) 100 groups from more than 12 countries"* [Final Report NCFI (1991)].

*"The Board further concluded that Mr. Swartz had failed to demonstrate that cold fusion could be reproducibly carried out as of the filing date of his application."* [Decision of 02-1240]

**The Truth - The Decision Ignores That Exhibits And Declarations Have Not Been Docketed**

6. The Decision ignores that the Office received, but does not even list Applicant's 11-times submitted peer-reviewed paper, three submitted videos, and Declarations, which have been conveniently "lost" although received (A10-A13, A18;

A197,A240,A323-325,A327-330,A339). The confidence of the public and military will be stunned when they examine that the Court ignored this matter.

#### **(4B) The Points Of Law Overlooked Or Misapprehended**

7. There are several points of law overlooked or misapprehended by the panel of the Court. The Declarations demonstrate that the original specification and claims clearly define subject matter of considerable utility. Therefore, the Applicant has fully conformed with, and satisfied, the requirements of §101 of the Patent Act and met at least one (1) stated objective [Standard Oil Co. (Indiana) v. Montedison, S.P.A., 664 F.2d 356, 375, 212 USPQ 327, 344 (3rd Cir. 1981), cert. denied, 456 U.S. 915, 102 S.Ct. 1769, 72 L.Ed.2d 174 (1982); E.I. du Pont de Nemours & Co. v. Berkley & Co., 620 F.2d 1247, 1258 n.10, 1260 n.17, 205 USPQ 1,8 n.10, 10 n.17 (8th Cir. 1980); Krantz and Croix v. Olin, 148 USPQ 659, 661-62 (CCPA 1966); Chisum on Patents, 4.04[4] [1983]; Raytheon Company v. Roper Corporation, U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592].

8. The Decision rejects Rule 132 requires Applicant's solid, substantial, and timely, evidence submitted against the Office's rejections be considered because "(p)atentability is determined on the totality of the record, by a preponderance of the evidence with due consideration to persuasiveness of argument."

9. The Decision rejects the reasoning of In re Gazave, 54 CCPA 1524, 379 F.2d 973, 154 USPQ 92 (1967)] and In re Chilowsky [43 CCPA 775, 229 F.2d 457, 108 USPQ 321 (1956)] require consideration of the material which Applicant supplied and cited.

10. The Decision rejects the reasoning of In re Oetiker, 977 F.2d at 1445, 24 USPQ2d at 1444 requires the Appellees to substantively respond to "a prima facie case of unpatentability". However, after the submission of Swartz(97) and the Declarations, which rebutted and totally addressed the comments by the Office, the

burden shifted back to the Office and can only be discharged by the Office "presenting evidence or reasons why persons skilled-in-the-art would not recognize in the disclosure a description of the invention defined by the claims" [Wertheim, 541 F.2d at 263, 191 USPQ at 97]. That was NOT done in this case, either by the Office or the Board.

11. The Decision rejects the reasoning of In re Brana and In re Eltgroth, 419 F.2d 918, 164 USPQ 221 (CCPA 1970) demand that the PTO must establish a reason to doubt an invention's asserted utility, and the measurement of heat producing activity is not unbelievable. '457 is quite believable because it measures controls and all types of samples.

12. The Decision rejects the reasoning of In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988) indicates that #1 or #2 are sufficient to demonstrate that the specification provides an adequately written description of the subject matter, including how to operate the invention, and claimed the invention so that an artisan, or those skilled-in-the-art, could practice it without undue experimentation. Either #1 or #2 prove that enablement, utility, and validation. Together, #1 and #2 corroborate enablement of the present invention both *de facto* and *de jure*.

13. The Decision rejects the reasoning of In re Irons that utility is a fact question [Raytheon Company v. Roper Corporation] and therefore the submitted un rebutted Declarations and ignored Amicus Curiae Briefs are relevant as proof of utility. The Declarations demonstrate that measurement of heat activity of samples was being used at the time of the filing of this patent, and that it was, and is, important and of considerable utility.

14. The Decision rejects the reasoning of In re Ziegler [992 F.2d 1197, 1200, 26 USPQ2d 1600, 1603 (Fed. Cir. 1993)] requiring the Office to accept Declarations as factual proof of utility.

15. The Decision rejects the reasoning of Marino v. Hyatt Corporation, 793 F.2d 427, 430 (1st Cir. 1986); Morrill v. Tong, 390 Mass. 1207 129 (1983); Chelebda v. H.E. Fortuna & Brothers Inc. 609 F.2d 1022 (1st Cir. 1979); Lewis v. Bours, 119 Wn.2d 667, 670, 1992] requiring the Office to assume that Appellant's Declarants' un rebutted assertions are true.

16. The Decision rejects the reasoning of In re Ferens [417 F.2d 1072, 1074, 163 USPQ 609,611 (CCPA 1969)] that evidence, including Declarations, is sufficient.

17. The Decision rejects the reasoning of In re Vaeck [947 F.2d 488, 495-96, 10 USPQ2d 1438, 1444 (Fed. Cir. 1991)] that an enablement rejection under section 112, ¶1 is only appropriate where the written description fails to teach those skilled-in-the-art, like the Declarants, to make and use the invention. Here there was the published identical peer reviewed publication conveniently ignored despite it being submitted eleven times.

18. The Decision rejects the reasoning of Ex parte Porter requiring that un rebutted Declarations, submitted in response to the Office's comments, should be read, examined, and carefully considered.

19. The Decision rejects the reasoning of In re Zurko [142 F.3d 1447, 1449, 46 USPQ2d 1691, 1693 (Fed. Cir.), cert. granted, 119 S. Ct. 401 (1998)] declaring that utility is a fact question [Raytheon Company v. Roper Corporation, U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592], and one which the Court must review for clear error [Cross v. Iizuka, 753 F.2d 1040, 1044 n.7, 224 USPQ 739, 742 n.7 (Fed. Cir. 1985); also In re Zurko].

20. The Decision rejects the reasoning of In re Morris [127 F.3d 1048, 1053-56, 44 USPQ2d 1023, 1027-30 (Fed. Cir. 1997)] demanding that the interpretation of operability and utility is predicated upon that which one who is skilled-in-the-art would reach. The Office should have given the claims their broadest reasonable

interpretation consistent with that which those skilled-in-the-art = ie. Declarants and silenced Amicus Curiae = would reach.

21. The Decision rejects the reasoning of In re Oetiker [977 F.2d at 1445, 24 USPQ2d at 1444] requires the Board (and Office) to substantively and fully respond to the probative witnesses (A52,A55,A56,A58,A61, A28,A32,A36, A38,A44,A47, A49,A50), because Applicant undertook the full burden coming forward (A10-A13,A18). The Decision should have responded to the unrebutted Declaration, but did not.

22. The Decision rejects the reasoning of Ex parte Gray [10 USPQ2d 1922, 1928 (Bd. Pat. App. & Inter. 1989)] allows for corroboratory expert testimony regarding operability and utility, beyond the detailed specification. The Board erred in failing to give substantial weight to said Declarations about what they said about this invention.

23. The Decision rejects the reasoning of In re Marzocchi and In re Oetiker require responsive argument to the fully addressed criticism against the office's unfounded notions. In re Marzocchi, 439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971)] declares that the Board cannot make the rejection it has unless it has reason to doubt the objective truth of the statements contained in the written description, here corroborated by multiple Declarations.

24. The Decision rejects the reasoning of In re Brana, 51 F.3d at 1566, 34 USPQ2d at 1441] indicates Applicant met the "burden shift ... to provide rebuttal evidence sufficient to convince such a person of the invention's asserted utility".

25. The Board has mistaken a question of fact for a question of law. The Board erred by dismissing declarations improperly to "opinion"-status, without an adequate explanation of how the declarations failed to overcome the *prima facie* case initially established by the Board and refuted by the evidence including the Declarations and Swartz(97). How many Declarants does it take to overcome the Office's

unsubstantiated rejection? Although Applicant discussed said Declarations in his Responses to the Examiner and the Board [A198, A248-A249, 256, 285-286, 298, A319-320, A329, A334-335, A342-343, A358-360, A380-385].

26. The Decision rejects the reasoning of *In re Alton* requires that even the use of the words "it is my opinion" to preface what someone of ordinary skill in the art knows does not transform the factual statements contained in the declaration into opinion testimony. Consequently, the Board's dismissal of the declarations (A52, A55, A56, A58, A61, A28, A32, A36, A38, A44, A47, A49, A50) on the grounds that they are "opinion" is an error of law.

27. The Decision rejects the reasoning of controlling authorities, including Clause 8 of Section 8, Article I, by improperly eliminating an entire field involving energy and United States security.

28. The Decision rejects the reasoning of Article VI, by interfering laws passed by Congress [Diamond v. Chakrabarty; 447 U.S. 303, 309] including that patentable statutory subject matter spans "anything under the sun that is made by man" [S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)].

29. The Decision rejects the reasoning of Article I, Section 2, by ignoring that Appellant is entitled to the privileges and immunities of citizens in the other states. Specifically, the Decision ignores that the Office, Europe and Japan have allowed selected other patents in the very same field not allowed here [Czirn(5,231,290), Westphal(5,215,631), Ahern(5,411,654), Patterson(5,036,031), (5,318,675), (5,372,688), (5,036,031); Aspden, UK-GB 2,231,195B]. This is a dual-tiered system.

30. The Decision rejects the reasoning of the Supreme Court in United States v. Nixon (1974) that all are "equal under the law".



31. The Decision rejects the reasoning of 14th Amendment, requiring an impartial tribunal [28 U.S. Code Section 144; Mayberry v. Penna., 91 S.8.; Bloom v. Illinois, 88 Ct. 499 S.Ct. 1477; Duncan v. Louisiana, 88 S.Ct.1444] and equal protection. In the light of the unrebutted Declarations, "lost" submitted papers, and the corrupted docket, there are violations of the 14th Amendment's "equal protection" clause [Frontiero v. Richardson, 93 S.Ct. 1736, 411 U.S. 677; Weiss v. Weiss, 436 N.Y.S. 2d. 862, 52 N.Y. 2d. 170 (1981)] with serious implications [Gass v. Lopez, 95 S. Ct 729; Wood v. Strickland, 95 S Ct 952; U.S. v. Price, 86 S Ct 1152, 1157, Footnote 7; Griffin v. Breckenridge, 91 S Ct 179D; Gamez v. Toledo, 42 U.S.C.§1983, and Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics].

32. The Decision ignores the American Bar Association's comments on new description guidelines of the PTO

[<http://www.uspto.gov/web/offices/com/sol/comments/utilitywd/aba.pdf>]

which says that the PTO should be "technologically neutral." This denial and other matters discussed, including the missing pleadings, and simply do not comport with any notion of fair play of justice.

33. The notions of equity and Constitutional issues hang in balance and although form and procedure often dominate in these proceedings, there should be favored truth, substance, justice and fair play. It is completely within the Court's discretion to correct the inaccurate description of facts, and to enforce the law and justice, and the general rule, especially where a party is *pro se*, is to rehear and correct such matters unless the Appellees can establish real prejudice.



## **(5) The Argument In Support Of A Rehearing**

34. The Decision ignores the standards of review and the Office's own rules and the US Constitution. The Decision has errors of fact and falsely impugns Dr. Swartz purported he did not respond when there is the impeccable and indelible evidence of the Office's own date-stamp (x11).

35. The Decision substantively ignored the unrebutted Declarants, skilled-in-the-art, who have disputed the Office and attest to conformation with 35U.S.C. §101. The Declarations demonstrate that the original specification and claims clearly define subject matter of considerable utility, and that therefore, the Applicant has fully conformed with, and satisfied, the requirements of §101 of the Patent Act and met at least one (1) stated objective [Standard Oil Co. (Indiana) v. Montedison, S.P.A., 664 F.2d 356, 375, 212 USPQ 327, 344 (3rd Cir. 1981), cert. denied, 456 U.S. 915, 102 S.Ct. 1769, 72 L.Ed.2d 174 (1982); E.I. du Pont de Nemours & Co. v. Berkley & Co., 620 F.2d 1247, 1258 n.10, 1260 n.17, 205 USPQ 1,8n10,10n.17 (8th Cir. 1980); Krantz and Croix v. Olin, 148 USPQ 659, 661-62 (CCPA 1966); Chisum on Patents, 4.04[4] [1983]; Raytheon Company v. Roper Corporation, U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592].

36. The Decision substantively ignored Swartz (97) which demonstrates enablement at the time of the initial filing despite that validation only comes through peer-review. Eleven (11) date stamps of the Patent Office are impeccable and undeniable evidence which which demonstrates submission and receipt of Appellant's peer-reviewed publication which proves utility and enablement as of the filing date of this application, such that one of skill in the art could conduct this patent without undue experimentation (A136).

37. The Decision should logically match and be accurate, consistent with the record and submitted Exhibits and Declarations, but it does not. The Decision does not read on the original specification and claims. It is submitted that if the Decision must rely upon reference to art out of a cloth other than this specification and claims, then its position was written before considering the facts of the case, and that the Office's case must indeed be rather weak and dictate allowance of the present invention.


38. The original specification and claims complied and conformed with the Patent Act and taught the subject matter defined by each of the rejected claims, set forth the best mode contemplated, and distinctly point out and claim the subject matter which constitutes the invention. This is forever corroborated by unrebutted declarations, ignored Amicus Curiae Briefs, and published peer-reviewed paper timely submitted with evidence including the impeccable date stamp of the Office.

39. Appellant regrets inadequacies that reflect a lack of legal education in this Request for Reconsideration, but the U.S. Supreme Court has ruled that any pro se litigant is entitled to less stringent standards [U.S. Rep volume 404, pages 520-521 (1972)].

40. Wherefore, Appellant respectfully requests that this honorable Court allow this Request for Rehearing concerning the matter of the Examiner's arbitrary rejection of claims 13-14, 21-22, and 24-39 (all pending claims), and order any other relief as the Court deems just, proper, fair and equitable.

Respectfully submitted,

November 15, 2002

 *Mitchell Swartz, MD, Appellant*  
\_\_\_\_\_  
Mitchell Swartz, MD, ScD, EE, Appellant, pro se  
P.O. Box 81135  
Wellesley Hills, MA 02481

**(6) ADDENDUM**

Requirement met by Decision bound with This Petition.

**(7) CERTIFICATE OF SERVICE (Rule 25 (D))**

Appellant certifies that he has complied with Rule 25 (d). Appellant mailed two (2) copies of the above Reply Brief first class prepaid to Appellee's counsel, Attorney Thomas Krause, Associate Solicitor, 2121 Crystal Drive, P.O. Box 15667, Arlington, Virginia, 22215, this November 15, 2002.



**(8) CERTIFICATE OF MAILING**

To Whom it Does Concern:

Appellant hereby certifies that this Reply Brief (twelve copies as directed), has been deposited with the United States Postal Service by First Class Mail, postage prepaid, in a timely manner based on permission from Appellee's counsel, in envelope addressed to

"Clerk, U.S. Court of Appeals for the Federal Circuit  
717 Madison Pl., NW  
Washington, DC 20439"

on the date below.

Thank you.  
November 15, 2002

  
M.R. Swartz

NOTE: Pursuant to Fed. Cir. R. 47.6, this disposition is not citable as precedent. It is a public record. This disposition will appear in tables published periodically.

## United States Court of Appeals for the Federal Circuit

02-1246  
(Serial no. 08/406,457)

IN RE MITCHELL R. SWARTZ

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DECIDED: November 8, 2002

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Before CLEVENGER, Circuit Judge, FRIEDMAN, Senior Circuit Judge, and PROST, Circuit Judge.

PER CURIAM.

Mitchell R. Swartz appeals from the decision of the United States Patent and Trademark Office ("PTO") Board of Patent Appeals and Interferences ("Board"), Appeal No. 1998-2593, affirming the examiner's final rejection of claims 13, 14, 21, 22, and 24-39 of application Serial No. 08/406,457 for lack of operability or utility under 35 U.S.C. § 101 and for lack of enablement under 35 U.S.C. § 112, ¶ 1. We affirm the Board's decision.<sup>1</sup>

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<sup>1</sup> The Board also reversed the examiner's rejection of claims 34-38 of Swartz's application under 35 U.S.C. § 103. The PTO does not cross-appeal this portion of the Board's decision.

The question of whether a specification provides an enabling disclosure under § 112, ¶ 1, and whether an application satisfies the utility requirement of § 101 are closely related." In re Swartz, 232 F.3d 862, 863, 56 USPQ2d 1703, 1703 (Fed. Cir. 2000) ("Swartz I"). In order to be enabling, a patent specification must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation. Enzo Biochem, Inc. v. Calgene, Inc., 188 F.3d 1362, 1371, 52 USPQ2d 1129, 1135 (Fed. Cir. 1999) (quoting Genentech, Inc. v. Novo Nordisk, A/S, 108 F.3d 1361, 1365, 42 USPQ2d 1001, 1004 (Fed. Cir. 1997)). Under § 101, any patentable invention must be useful and, accordingly, the subject matter of the claim must be operable. Process Control Corp., 190 F.3d 1350, 1358, 52 USPQ2d 1029, 1034 (Fed. Cir. 1999). As a result, if the claims in a patent application fail to meet the utility requirement because they are either not useful or inoperative, they will also fail to meet the enablement requirement. See id., 52 USPQ2d at 1034-35; see also Swartz I, 232 F.3d at 863, 56 USPQ2d at 1704 ("If the claims in an application fail to meet the utility requirement because the invention is inoperative, they also fail to meet the enablement requirement because a person skilled in the art cannot practice the invention."). A claim that requires a means for accomplishing an unattainable result is necessarily inoperative and will consequently be held invalid under either § 101 or § 112. Raytheon Co. v. Roper Corp., 724 F.2d 951, 956, 220 USPQ 592, 596 (Fed. Cir. 1983). Utility is a question of fact, In re Cortright, 165 F.3d at 1353, 1356, 49 USPQ2d 1464, 1465 (Fed. Cir. 1999), while lack of enablement is a question of law based on underlying factual inquiries. See Natl. Recovery Techs., Inc. v. Magnetic Separation Sys., Inc., 166 F.3d 1190, 1194, 49 USPQ2d 1671, 1674 (Fed. Cir. 1999).

On appeal, we review the Board's findings for fact for substantial evidence. See In re Garlside, 203 F.3d 1305, 1315, 53 USPQ2d 1769, 1775 (Fed. Cir. 2000). We review questions of law de novo. See In re Wright, 999 F.2d 1557, 1561 (Fed. Cir. 1993).

Before the PTO can reject a patent application for lack of utility, it must have reason to doubt the objective truth of the statements provided in the written description. See In re Brana, 51 F.3d 1560, 1566, 34 USPQ2d 1436, 1441 (Fed. Cir. 1995). Once the PTO furnishes evidence demonstrating that one of ordinary skill in the relevant art would reasonably doubt the asserted utility of the invention claimed in the application, however, the burden shifts to the applicant to provide evidence sufficient to convince such a skilled individual of the invention's asserted utility. Swartz I, 232 F.3d at 864, 56 USPQ2d at 1704. As this court held in In re Brana, 51 F.3d at 1566, 34 USPQ2d at 1441, the PTO may establish a reason to doubt an invention's asserted utility when the written description "suggest[s] an inherently unbelievable undertaking or involve[s] implausible scientific principles."

In the instant case, the Board concluded that the record evidence supported the examiner's finding that Mr. Swartz's claims are directed to the accomplishment of an "unattainable result," i.e., a result that is not attained in a reproducible manner," namely cold fusion. Reviewing the references relied on by the examiner in support of its lack of utility determination, the Board determined that "there is substantial evidence of record that results in the area of 'cold fusion' were irreproducible as of the filing date of this application, and that those skilled in this art would 'reasonably doubt' the asserted utility and operability of cold fusion." The Board further concluded that Mr. Swartz had failed to demonstrate that cold fusion could be reproducibly carried out as of the filing date of

his application. Pursuant to Mr. Swartz's request for reconsideration, the Board reviewed its initial decision, subsequently declining to modify that decision.

On appeal, Mr. Swartz argues that the Board's conclusion on the issue of utility was in error for two reasons. First, he asserts that the Board erred by limiting its utility analysis to the question of cold fusion because his claimed invention possesses utility outside this realm. As the Board stated on Mr. Swartz's request for rehearing, however:

Throughout his application, throughout the prosecution, and throughout his briefs, appellant has maintained that his invention relates to and embodies the concept known as "cold fusion." We have scoured appellant's brief and his reply brief and are unable to find therein any reference to the argument now raised by appellant in his request for reconsideration concerning utility other than "cold fusion."

Because Mr. Swartz made no representations that his claimed invention related to anything other than cold fusion in his written description and throughout the prosecution of his application, he may not now make such representations on appeal. See Swartz I, 232 F.3d at 864, 52 USPQ2d at 1704 ("Mr. Swartz's attempt to show that his claims are directed to a process other than cold fusion must fail. In his written description and throughout prosecution of his application, Mr. Swartz continually represented his invention as relating to cold fusion."). Mr. Swartz's second argument, that the Board erroneously ignored several declarations, exhibits, and references that demonstrated the utility of his claimed invention, is equally unconvincing. The Board's decision reveals that it based its conclusions on a careful examination of the evidence of record, including those references that Mr. Swartz now alleges it disregarded. As the Board found, "[t]he list of references cited by appellant reports experimental studies that present results that may indicate the presence of [cold fusion]. However, this is

insufficient to establish utility and enablement within the meaning of the relevant sections of the statute."

On the issue of enablement, Mr. Swartz again argues that the Board erred by focusing on cold fusion and ignoring relevant declarations, exhibits, and references. For the reasons stated above, however, these assertions lack merit. Moreover, as the Board correctly concluded, Mr. Swartz's claims failed to meet § 101's utility requirement. As such, these claims could not be enabled under § 112, ¶ 1, and the Board therefore did not err when it affirmed the examiner's rejections of Mr. Swartz's application on this ground.<sup>2</sup> See Process Control Corp., 190 F.3d at 1358, 52 USPQ2d at 1034-35. Finally, as to the host of unsupported legal theories that Mr. Swartz advances in support of his claim, we have considered those arguments and find them entirely unpersuasive. Accordingly, the judgment of the Board is affirmed.

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<sup>2</sup> The Board analyzed Mr. Swartz's application in terms of claim 13, which it found to be representative. On appeal, Mr. Swartz takes issue with this analysis, arguing that his claims do not stand or fall with claim 13. Because Mr. Swartz's claims are all directed to cold fusion, however, and because the Board properly concluded that Mr. Swartz had failed to prove that cold fusion could be conducted in a reproducible fashion at the time of the application's filing, the question of claim 13's representative nature is irrelevant, and we therefore do not discuss it further.





**UNITED STATES PATENT AND TRADEMARK OFFICE  
Board of Patent Appeals and Interferences**

Inventor : Mitchell R. Swartz  
Serial no. 09/ 750,765      Examiner: Palabrica, R.J.  
Filed: 12/28/00  
For: **METHOD AND APPARATUS  
TO CONTROL ISOTOPIC FUEL  
LOADED WITHIN A MATERIAL**  
This is a continuation of Serial no. 07/ 760,970  
Filed: 09/17/1991

Group Art Unit: 3641

July 25, 2012

**Board of Patent Appeals and Interferences**  
Box 1450  
Alexandria, VA 22313-1450

***pro se* Related Proceedings Appendix**

Mitchell R. Swartz, ScD, MD, EE  
Appellant, *pro se*



RESPONSE UNDER 37 CFR 1.116  
EXPEDITED PROCEDURE  
EXAMINING GROUP 3641

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Inventor : Mitchell R. Swartz  
Serial no. 07/ 760,970 Filed: 09/17/1991

For: METHOD AND APPARATUS  
TO CONTROL ISOTOPIC FUEL  
LOADED WITHIN A MATERIAL

Box Appeal  
Commissioner for Patents  
P.O. Box 1450  
Alexandria VA 22313-1450

December 5, 2011

***pro se* APPLICANT'S PETITION TO THE COMMISSIONER  
PURSUANT TO 37 C.F.R. 1.181**

1. This Petition is made by the *pro se* Appellant pursuant to 37 C.F.R. 1.181 to the Commissioner of Patents, and is made to invoke his immediate supervisory authority to expedite a correction to a wrongful situation involving a non-responsive "Letter" dated November 30, 2011 [Exhibit "A" attached, hereinafter "Letter" or "unrecorded decision"].

2. Pursuant to 37 C.F.R. 1.181, there is no fee. This Petition is reasonable based upon the reasons stated below, and the facts as discussed in the Declaration supporting this Petition.

3. In the discussion below, reference is made to the Declaration of Dr. Mitchell Swartz (hereinafter called the "Swartz Declaration") dated December 5, 2011, and to the Declarations of Ms. Gayle Verner (hereinafter called the "Verner Declaration"). In the discussion below, reference is also made to the Declaration of Dr. Mitchell Swartz (hereinafter called the "Swartz Declaration") dated April 6, 2011, and to the Declarations of Ms. Gayle Verner (hereinafter called the "Verner Declaration") and Dr. Brian Ahern.

4. The U.S. Supreme Court has ruled that any *pro se* litigant is entitled to less stringent standards [U.S. Rep volume 404, pages 520-521 (1972)].

#### **MR. KNIGHT'S "LETTER"**

5. On December 2, 2011, the Petitioner received a seven-page letter from, and signed by Mr. Anthony Knight, Director, Office of Petitions. Mr. Knight's letter includes a "background" section which is contrived by false, misleading, and incomplete statements. It begins with his fabricated, near-mythical, description of the submitted Petition. Thereafter, the contrived "analysis" and self-serving "conclusion" by Mr. Knight.

There are several problems. First, said "Letter" consists of disingenuous, inaccurate, and incomplete statements made in a federal document which was also transmitted through the US mail, dated November 30, 2011.

Second, the indelible record has been ignored.

Third, the ruling law is ignored.

Fourth, there is the appearance of impropriety.

Fifth, this will be shown in palpable detail below.

**BACKGROUND: TIME TABLE OF ABOVE-ENTITLED INVENTION ['970]**

6. In 1991, Applicant filed the original specification and claims of application Serial no. 07/ 760,970 [09/17/1991].

1991 - 09/17 Serial no. 07/ 760,970 The original specification and claims filed:  
09/17/1991

1998 - 09/10/1998 Order of the Board of Patent Appeal for Examiner to Consider  
Declarations and other Matters (Ignored by Office)

2000 - 12/28 Filing of Continuation: Serial no. 09/ 750,765 Filed: 12/28/00

2000 - 11/08 Federal appellate court of Appeals decides Petitioner's case

2000 - 12/08 Timely petition for rehearing submitted to federal appellate court of  
Appeals

2001 - 01/18 Filing of Pet. Cert. to the US Supreme Court (00-1191) and Motion to  
Reconsider (no response by the USPTO; in the words of the clerk at SCOTUS this is  
the first time ever); Motion to Reconsider filed

2011 - 03/22 Appellant sent Notice of Abandonment on 07/760,970 by Examiner Jack  
W. Keith, Art Unit 3663.

2011 - 11/28/11 Appellant sent "Letter" by Mr. Knight.

**UNDISPUTED FACT: APPELLANT'S FEES WERE PAID (MGL 93A)**

7. Appellant (earlier as Applicant) paid the fees on '970 and '765 for both Patent Application and Board of Patent Appeal for services which have not been rendered or provided. The USPTO remains in violation of MGL 93A.

**UNDISPUTED FACT: MR. KNIGHT'S "LETTER" MISCHARACTERIZES  
THE PETITION**

8. The egregious "Letter" by Mr. Knight disingenuously states

*"This is a letter in response to the Petition to the Commissioner pursuant to 37 CFR 1.181, filed April 8, 2011, which is best characterized as a letter to the Director of the USPTO in light of the decision of the Court of Appeals for the Federal Circuit. ... Mr. Swartz filed the present "Petition to the Commissioner pursuant to 37 CFR 1.181," to "invoke the supervisory authority to correct a wrongful situation involving a Notice of Abandonment. Mr. Swartz avers that on September 10, 1998 an Order of the Board of Patent Appeals and Interferences directed the Examiner to consider Declarations and other matters, which the Examiner has ignored. ... Mr. Swartz also provides that he has never abandoned the present application. He asserts that the Notice is fraudulent, and that the statement (as to the abandonment of the application) is false, knowingly deceptive and self-serving. ... He requests relief from the statement that the application is abandoned after the Board Decision, and again requests recusal of the examiner and the Art Unit, and an internal investigation."*

The "Letter" is inaccurate and does not reflect the facts. First, the substantive basis of the Petition and the submitted Declarations have been both ignored. The "Letter" fails to substantially address the actual issues in the submitted Petition to the Commissioner. As the Swartz states,

"The "Letter" is not substantively responsive to the actual issues in my submitted Petition to the Commissioner."

Second, these statements in the "Letter" are serious mischaracterizations, made with the appearance of impropriety, obstruction of justice, and possible misprision of felony.

Third, said "Letter", signed by Mr. Anthony Knight, is completely improper.

**UNDISPUTED FACT: Mr. Knight Falsely Claims '970 was Abandoned for Failure to Reply**

9. The egregious "Letter" by Mr. Knight falsely, and deceptively, states

*"The above-identified application became abandoned for failure to timely and properly reply to the final Office action, mailed September 2, 1993 wherein the Examiner rejected claims 25-48. The Office action set a three (3) month period for reply, and provided for extensions of time under 37 CFR 1.136(a) (the period for reply was restarted in an Office communication mailed September 8, 1993). Mr. Swartz, the applicant, filed replies to the Office action on November 5, 1993 and December 3, 1993; however, the replies failed to place the application in condition for allowance. Applicant was so notified in Advisory Actions mailed November 23, 1993 and December 22, 1993 respectively. Accordingly, the application became abandoned on December 4, 1993, for failing to file a complete and proper reply to the Office action.*

In fact, this statement in the "Letter" is completely untrue. First, the postal card, indicating receipt by the USPTO [Exhibit "B"] reveals a complete and proper reply that was ignored.

The USPTO failed to document the submitted Exhibits (*vide supra, vide infra*). As the Swartz states,

**"The "Letter" contains statements which are not accurate. Despite what Mr. Knight purports, I filed a complete and proper reply to the final Office action mailed September 2, 1993. The date stamp of the USPTO confirms receipt. The substance of the reply was simply, substantively ignored. There was no abandonment."**

Second, there were several Exhibits rendered to correct false statements by the Examiner [Exhibit "C"]. The Applicant filed a complete and proper reply to the final Office action mailed September 2, 1993. The USPTO failed to record it.

Therefore, statements by Mr. Knight in his "Letter" are false, and a violation of 18 U.S.C. §1001. They disagree with the actual record. Pursuant to 35 U.S.C. 120, Applicant "filed before the patenting or abandonment of or termination of proceedings on the first application" and then Applicant filed for each "application similarly entitled to the benefit of the filing date of the first application". Furthermore, each patent application contained "specific reference to the earlier filed application". Therefore, Applicant complied with 35 U.S.C. 120. There was no abandonment.

**UNDISPUTED FACT: MR. KNIGHT IS DECEPTIVE - THE BOARD  
REVERSED THE EXAMINER ON 35U.S.C. §102 AND 35U.S.C. §103**

10. The "Letter" by Mr. Knight disingenuously states

*"The Board issued a Decision on June 22, 1999, affirming the decision of the examiner. ... The Board affirmed the examiner on June 22, 1999, and applicant filed a Request for Reconsideration Or Modification Of Decision, which was denied in an Opinion mailed September 28, 1999."*

*... "Said final Office action was affirmed by both the Board of Patent Appeals and Interferences and the United States Court of Appeals for the Federal Circuit. It is again noted that the statute directs that the application "shall" be regarded as abandoned, and where the directions of a statute are mandatory, strict compliance with the statutory terms is essential.*

*As to applicant's request for recusal of the examiner and the Art Unit, as noted above, the application is abandoned by operation of law, and not by the mailing of a Notice of Abandonment. As such, applicant's assertions as to the impropriety of the actions of the Examiner in the mailing of the Notice of Abandonment are irrelevant given that the present application stands abandoned after a decision of the Court of Appeals for the Federal Circuit."*

First, Mr. Knight is deliberately misleading -- no matter how many times he repeats his incomplete falsehoods. The Board of Patent Appeals and Interferences, in Appeal No. 94-2920, regarding the specification and claims of application serial number 07/760,970 ("the '970 application"; A160-A189 in the Exhibits in federal appellate court) held FOR the Appellant, in its Decision, as the Board reversed the examiner's rejections of claims 25 through 48 pursuant to 35U.S.C. §102 and 35U.S.C. §103. As the Swartz states,

**"The "Letter" contains statements which are not accurate. ... Despite what Mr. Knight purports, the Board reversed the Examiner's rejections of claims 25 through 48 pursuant to 35U.S.C. §102 and 35U.S.C. §103."**

11. Second, ONLY because of false statements from the Office, and the removed submitted papers, the examiner's rejections of claims 25 through 48 pursuant to 35U.S.C. §112 and 35U.S.C. §101 were affirmed. The USPTO purports that only conflict energy is useful. Clean, efficient energy is abhorrent to Mr. Knight, Dr. Palabrica and the Commissioner of Patents. With the US at War over energy, only conflict oil is, and has been, important to the USPTO and Mr. Knight, which(who) continues to obstruct justice for reasons not clear (but which hopefully the judiciary and Congress and investigatory bodies may someday deconvolve).

Third, a timely Single Request for Reconsideration was submitted to the Board of Patent Appeals and Interferences on July 19, 1999. On September 28, 1999, the Board denied said Request. In a timely manner, Appellant thereafter filed Notice of Appeal on October 14, 1999, in the UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT and appeals the final Decision constituting the rejection upheld by the Board of Patent Appeals and Interferences of all pending claims of the '970 application pursuant to 35

U.S.C. §112 and 35 U.S.C. §101. Jurisdiction in federal court was, and remains, appropriate in view of diversity of citizenship and Articles I, III, and VI, and the Fourth, Fifth, Sixth, Thirteenth and Fourteenth Amendments of the Constitution of the United States of America. Venue of this judicial district is appropriate in view of 35 U.S.C. §145, §146, and §306.

## **UNDISPUTED FACT: MR. KNIGHT HAS MISCHARACTERIZED FEDERAL COURT**

12. The egregious "Letter" by Mr. Knight disingenuously states

*"Mr. Swartz appealed the decision of the Board to the United States Court of Appeals for the Federal Circuit. The United States Court of Appeals for the Federal Circuit affirmed the judgment of the Board in an Opinion mailed November 8, 2000. "*

*"The United States Court of Appeals for the Federal Circuit affirmed the judgment of the Board in an Opinion mailed November 8, 2000. A Notice of Abandonment was mailed on March 22, 2011, noting as the reason for abandonment the decision by the Board of Patent Appeals and Interferences rendered September 28, 1999 and because the period for seeking court review of the decision has expired and there are no allowed claims, noting that the United States Court of Appeals for the Federal Circuit had affirmed the judgment of the Board."*

In fact, this statement in the "Letter" is completely untrue. After the Board of Patent Appeals and Interference rendered its Decision, the case was brought by the Appellant to the federal appellate court in a timely fashion. The date on which the court of Appeals decided Petitioner's case [00-1108] was November 8, 2000. A timely Petition for Rehearing was submitted and was thereafter denied by the court of Appeals on December 8, 2000. In its Decision regarding 00-1108, on 11/8/00, the Court of Appeals affirmed the Board's decision and the federal court stated that

**"Mr. Swartz made no substantive arguments addressing the examiner's rejection.**

**... Mr. Swartz presented no substantive arguments." [Decision 00-1107, 11/8/00]**

This was because the materials had been removed by the Office. This was exposed during a *duces tecums*. The USPTO was, and is in the present "Letter", rife with the appearance of impropriety.

## **UNDISPUTED FACT: MR. KNIGHT COVERS UP '765**

13. The egregious "Letter" by Mr. Knight disingenuously states

*"On this appeal, Mr. Schwartz complains that the Board "ignored" evidence that he submitted and disregarded his arguments, and he invites this Court to examine voluminous record material that he urges supports his position on the issue of utility. Such conclusory allegations in an appeal brief are quite insufficient to establish that the Board's decision on the issue of utility is not supported by substantial evidence or to establish that the Board's ultimate conclusion of a lack of enablement is incorrect as a matter of law. In Re Schwartz, 56 USPQ 2d 1703, 1704 (Fed. Cir. 2000). "*



In fact, the above statement in the "Letter" is disingenuous, with the appearance of impropriety, in several ways. First, '970 is linked to '765. On December 28, 2000, Appellant filed a Continuation of '970, entitled Serial no. 09/ 750,765 [Filed: 12/28/00]. In '765, the Appeal Briefs contain the Evidence comprising the 'voluminous record material that (Appellant) urges supports his position on the issue of utility'. They also contain Evidence of corruption by those whom Mr. Knight is attempting to protect using his "Letter".

14. Second, Mr. Knight continues obstruction of justice. The Applicant has presented evidence of heat and nuclear reaction products measured by professional scientists including himself and members of the US Navy. Both DIA and DTRA recognize the applicant AND his invention and find utility. In said Dec. 12, 2006, Defense Threat Reduction Agency Ft. Belvoir, Virginia, Report, the Advisory Board Findings and Recommendations say:

"There is good evidence of excess heat and transmutation."

Attention is directed to Page 21 which has a summary of Applicant's presentation. Mr. Knight knows, the Examiner knows, that the Board knows, and that the American people and Congress know that the Board and Examiner know, and have known. Said background sections supplement the responses so that the Examiner and Office can be on the same page as DTRA, DARPA, the US Navy, NASA and other US agencies that now take the Applicant's inventions and the fields in which they also work quite seriously. The notion presented by the Office has been that lattice related nuclear reactions do not exist, and that there is no nuclear chemistry in deuterated palladium alloys. However, that is not true. The literature shows the Office's belief is obstructively, vindictively, wrong. DTRA disagrees with the Office's notion and assessment. DARPA disagrees with the Office's notion and assessment. The US Navy disagrees with the Office's notion and assessment. NASA disagrees with the Office's notion and assessment. Thousands of scientists disagree with the Office's notion and assessment. The Declarations demonstrate the existence of lattice assisted nuclear reactions including the generation of heat. Nothing of substance or scientific foundation has been presented by the Office or other Art which rebuts the content of the above-entitled application OR the Declarations or the Amicus

Curiae Briefs of Straus, Chubb, Mallove, Fox, and Valone. Nor has the Office presented any argument of substance to support his incorrect, proven-wrong, notions with respect to any of the matters discussed therein

**UNDISPUTED FACT: APPEAL BRIEF SEQUESTRATION IS SERIOUS AND IMPORTANT**

15. Third, Mr. Knight begins a new count of misprision of felony. The "Letter" has the appearance of impropriety. The sequestered *pro se* Appeal Brief in '765 is relevant to the Board of Patent Appeals. It is not only a travesty that it has been withheld, but it is also relevant to other cases presently before the Board which directly affect and are directly affected by or have a bearing on the Board's decision in the pending appeal.

The "Letter" has the appearance of impropriety. The reason the Appeal Briefs have been withheld by the Examiner(s) is that the USPTO was exposed having also removed Evidence from those file folders in cases which were before the Board of Patent Appeals (*vide infra*).

The "Letter" has the appearance of violations of MGL 93A. The Office has for years continued to cash the Applicant's checks for patent application fees and then Appellant's (then Applicant's) checks for Appeals before the Board of Patent Appeals which have been denied to the *pro se* Applicant by sequestration of the *pro se* Appeal Briefs.

The "Letter" has the appearance of obstruction of justice and systematic abuse. The Examiner Dr. Ricardo Palabrica has systematically attempted to throw out each of Applicant's (now Appellant's) applications, including the above-entitled application, using false statements and false abandonments.

Since the Appeal Brief was filed, there has been a systematic delay to send this to the Board for years. This has the appearance of impropriety and may be perceived as an obstruction of justice and egregious lack of ethics.

**UNDISPUTED FACT: MPEP 1206 SUPPORTS THE APPELLANT**

16. MPEP 1206 states:

**"An exception to the requirement that all the items specified in 37 CFR 1.192(c) be included in the brief is made if the application or reexamination proceeding is being prosecuted by the appellant *pro se*".**

The Appellant addressed the Compliance and other relevant issues both in the Swartz Declarations and in the other, too long-ignored responses and communications to the USPTO. For example, the Appellant addressed these issues in his (sequestered, "lost" or destroyed) missives entitled, Notice of Compliance [January 4, 2004], Motion for Sanctions [April 21, 2004], and Responses to the USPTO [April 21, 2004 and May 26, 2004].

The *pro se* Appellant has also filed an unaddressed Motion for Sanctions supported by unrebutted Declarations. The Examiner Dr. Ricardo Palabrica has systematically ignored timely submitted responses. In addition, he has systematically ignored timely submitted Declarations and other Exhibits (some of which on information and belief have been "missing" from the file folder).

#### **UNDISPUTED FACT: MR. KNIGHT HAS MISCHARACTERIZED NATURE OF PETITIONS**

17. Mr. Knight has erred by ignoring the nature of Applicant's Petitions which involved the Office's lack of good-faith execution of MPEP 707.07(j) and MPEP 706.03(d) following a duly-served request. The Office ignored 1.192c(6)(v): The Office failed good-faith execution of MPEP 707.07(j) and MPEP 706.03(d) following duly-served requests for entry of such suggestions.

## UNDISPUTED FACT: IN '970 THE OFFICE REMOVED AND MISLABELED EVIDENCE

18. The egregious "Letter" by Mr. Knight disingenuously states

*"Mr. Swartz argues that there was evidence withheld from the Board and Court. Specifically, Mr. Swartz avers that the Office's docket given to the Board was inaccurate, and that as many as six (6) pleadings of, or communications by, the Office were not sent to Appellant, and thirty seven (37) of Appellant's pleadings and Declarations were not recorded, and as many as seven (7) of the Office's entries were out of order. "Petition" at para. 7-8. As noted supra, the petition was dismissed in a decision mailed October 30, 1996. Mr. Swartz provides that no explanation was given for these irregularities, and that "[t]hey refuse to allow the case to mature to the Board of Patent Appeal[s]." "Petition" at para. 10."*

Once again, the statements in the "Letter" are simply not true. What was revealed was that in the above-entitled application, to wit: '970, previously before Board of Patent Appeals and the US federal court, the Office's "docket" was inaccurate in several ways [e.g. Exhibit "E"]. The Office was (and had been) disingenuous about Evidence. When a *duces tecums* was delivered to the USPTO's counsel in the federal appellate court, it was revealed that some of the Declarations were egregiously hidden from the Board. The awareness that Evidence was removed only finally appeared in the federal appellate court. Incredibly, despite the Board's Order, some of the Declarations were egregiously hidden from the Board and the federal court.

The findings of corruption in the Office revealed by said *duces tecums* on subpoena are serious (as is the present false statement by Mr. Keith) because Evidentiary materials in a federal court case were systematically withheld, and/or removed.

The exposure of corrupt behavior by the Office included that the Office had failed to log in or consider all the relevant submitted Declarations - despite a previously ignored Remand by the Board to do just that.

19. THEREFORE: Attention of the Court and Congress and investigative authorities is directed to the fact that Mr. Knight actually uses a Petition from 1996 to attempt to impute Evidence which appeared in the federal court after the turn of the next century. This is quite audacious. Said Evidence revealed in federal appellate court the following:

It was revealed ONLY AFTER the Board's Decision (In re Swartz) that the Office's "docket" was not timely recorded by the Office.

It was revealed ONLY AFTER the Board's Decision (In re Swartz) that not all the pleadings and Declarations and Evidence submitted by the Appellant (then Applicant) were actually logged into the record. The Applicant undertook the full burden coming forward with Evidence as required [In re Oetiker, 977 F.2d at 1445, 24 USPQ2d at 1444]. Significant, detailed, precise, specific, substantive arguments and Evidence of record were submitted by the Applicant to show that the Examiner was incorrect, and to support that the invention does operate as indicated by Applicant. At the US Patent Office, the submitted Evidence was removed/ignored/or destroyed (as it has been, over and over, *vide supra*, *vide infra*, by the Office) and the invention was misdescribed (as it has been over and over by the Office).

It was revealed ONLY AFTER the Board's Decision (In re Swartz) that as many as six (6) pleadings of, or communications by, the Office were not sent to the Appellant.

It was revealed ONLY AFTER the Board's Decision (In re Swartz) that thirty seven (37) of Appellant's pleadings and Declarations were not recorded.

It was revealed ONLY AFTER the Board's Decision (In re Swartz) that seven (7) of the Office's entries were out of order, indicating that the purported "Docket" was not made contemporaneously.

It was revealed ONLY AFTER the Board's Decision (In re Swartz) that pleadings and Declarations were "misplaced", but really "deliberately misfiled" by not recording them.

It was revealed ONLY AFTER the Board's Decision (In re Swartz) that some Declarations were incorrectly listed as "letters", and nearly a score of pleadings listed out-of-order temporally [and even later labeled with half-"1/2"-numbers], these pleadings and several Declarations all reached the Office as proven by the stamp of the US Patent Office. The Declarations entered late were given "half" numbers to fit them in.

**UNDISPUTED FACT: IN '937, THE OFFICE ALSO REMOVED AND  
MISLABELED EVIDENCE**

20. In other applications of the Applicant, someone from the USPTO also removed other Evidentiary documents. In its Decision regarding 00-1107, on 11/8/00, the Court of Appeals affirmed the Board's decision for putative lack of enablement under 35 U.S.C. § 112, ¶1, and indefiniteness under 35 U.S.C. §112, ¶2 saying that the Applicant has failed to respond. The federal court stated that "Mr. (sic) Swartz made no substantive arguments addressing the examiner's rejection. ... Mr. (sic) Swartz presented no substantive arguments." [Decision 00-1107, 11/8/00]. The Declarations and peer-reviewed papers, as with '457, were egregiously removed surreptitiously by the Office. Despite the fact that the Applicant provided substantive rebuttal evidence [In re Marzocchi] including Declarations by those skilled-in-the-art, supported by peer-reviewed published papers, the Office removed the Evidence.

The Office continued to be disingenuous until the moment in US federal appellate court that it was revealed that not all the pleadings and Declarations were logged into the record. Some of the Declarations were egregiously hidden from the Board and the federal court. They were "misplaced" by not recording them. What was exposed was that some Declarations were incorrectly listed as "letters", and nearly a score of pleadings listed out-of-order temporally [and even later labeled with half-"1/2"-numbers], these pleadings and several Declarations all reached the Office as proven by the stamp of the US Patent Office. The Declarations entered late were given "half" numbers to backtrack and make them fit them in.

As a result, there was a Petition for Certiorari to the Supreme Court of the United States (00-1191) and a Request for Consideration [Exhibit "D"]. What was exposed, resulting in the Request for Consideration and the Petition for Certiorari to the Supreme Court of the United States (00-1191) was that the Office had failed to log in or consider all the relevant submitted Declarations - despite a previously ignored Remand by the Board to do just that. So, following the revelations that someone in the Office had 'doctored' federal documents, the US Patent Office defaulted (ie. failed to answer). The Office failed to Respond

in the Supreme Court (twice). According to the clerk at the US Supreme Court, this was the first time in history they had ever defaulted.

**"FATETUR FACINUS QUI JUDICIUM FUGIT."**

**UNDISPUTED FACT: MR. KNIGHT HAS IGNORED "MISPLACED"**

**EXHIBITS**

21. Mr. Knight has erred by Taking Lightly Missing Papers and Exhibits (A109-A117) because they are relevant, important, and the amount of evidence required for proof of utility depends on the facts of each individual case [In re Gazave, 54 CCPA 1524, 379 F.2d 973, 154 USPQ 92 (1967); In re Chilowsky, 43 CCPA 775, 229 F.2d 457, 108 USPQ 321 (1956); In Re JOLLES, U.S.C.P.A., 1980, 628 F.2d 1322, 206 USPQ 885]. Applicant has provided the Office (and Board) with sterling references consisting of scores of articles (A109) taken from peer-reviewed and other scientific and educational journals, all in rebuttal to the Office's misstatements. These were properly listed, with appropriate Petition pursuant to 37 CFR 1.97(d)(1)(ii), and certificate pursuant to 37 CFR 1.97(d)(1)(e).

The latter tapes were supplied on or about April 22, 1994 (and in each of the other pending applications before the Board), and received [confer the middle of Exhibit 1] but have

As an example of additional misplaced exhibits, Applicant provided three (3) videos; documentaries made by reputable production groups -- the Canadian Broadcasting Company [CBC (1993), CBC (1994)] and the British Broadcasting Company ["Horizons", BBC (1994)]. The latter tapes were supplied on or about April 24, 1994 and not considered by the Board precisely because the Office's witnesses, referred to continually in the Decision on reference to FP, each make a poor showing therein. Similarly, Applicant provided Swartz, M., 1996, Journal of New Energy, 3, 68-80 (1996) disputing the Board's unreasonable opinion that an electrode cannot be made to have a vibrations as taught in the original specification and claims. The tapes and the Declarations have been lost, ignored, and listed as "letters" (A1-A11).

**UNDISPUTED FACT: THE BOARD FOUND THE OFFICE LACKING  
(REMANDS)**

22. The egregious "Letter" by Mr. Knight partially correctly states:

*"On October 13, 1995, The Board remanded the application file to the Examiner to consider the Petition to the Commissioner under 37 CFR 1.181 filed January 7, 1994, and the Declaration of Isador Straus, IDS, and the Reply Brief Declaration of Dr. Mitchell Schwartz filed with the Reply Brief on April 28, 1994. The Petition to the Commissioner under 37 CFR 1.181, filed January 7, 1994, was dismissed in a decision mailed November 14, 1995, and the Examiner mailed an Office communication on November 15, 1995, addressing the Declaration of Isador Straus, IDS, and a Reply Brief Declaration of Dr. Mitchell Schwartz. Mr. Swartz filed a second Petition to the Commissioner Pursuant to 37 CFR 1.181 on March 4, 1996, which was dismissed in a decision mailed April 2, 1996."*

*"On March 5, 1997 the Board again remanded the application to the Examiner and noted that there was no record of any response to Mr. Swartz's third Petition to the Commissioner Pursuant to 37 CFR 1.181, filed April 30, 1996."*

*"On September 18, 1998, the Board remanded the application to the Examiner to, inter alia, specifically enumerate which of Applicant's filings and/or references had been considered. The Examiner mailed an Office communication in response to the Board's remand on October 7, 1998."*

*"As to Mr. Swartz's assertion that on September 10, 1998 an Order of the Board of Patent Appeals and Interferences directed the Examiner to consider Declarations and other matters, which the Examiner has ignored, Office records confirm that on September 18, 1998, the Board remanded the application to the Examiner to, inter alia, specifically enumerate which of applicant's filings and/or references had been considered. The Examiner mailed an Office communication in response to the Board's remand on October 7, 1998."*

As Mr. Knight admit, and the record documents, the Board did find the Office lacking. The Office did not respond substantively, instead removing submitted documents (as discovered in federal appellate court), and then being disingenuous to the Judges on the Board of Patent Appeals.

However, the implications of the above statements in the "Letter" are seriously misleading. The Office NEVER addressed the Declarations substantively and precisely. In fact, it would later be exposed (in federal appellate court) that other declarations and submitted documents were never even recorded. The first Examiner (Mr. Wasil) admitted the papers were removed from the file folder.

On Sept. 10, 1998 An Order of the Board of Patent Appeal directed the Examiner to Consider Declarations and other matters. Attention is directed to the fact that the Examiner is STILL in contempt of the Appeal Board. The, so far still-ignored, Remand and Order explicitly stated,

**"Further, the examiner should explain why these 'filings' and 'references' are inadequate in evidentiary weight, to overcome the evidence proffered by the examiner."**



23. The Board has remanded the case AT LEAST three times back to the Office (1/22/1997, 3/12/1997, and 9/16/1998), twice directing the Examiner to answer the Declarations (eg. A81). Attention is directed to the fact that the Board had the authority to Order the Office to substantively respond pursuant to MPEP §1211.

24. Said Remand Order from the Board on October 13, 1995 remains ignored in substance. The Declarations must be answered in specificity about operability and utility, but have not been. The Decision of June, 22, 1999 simply ignores the entire matter, failing to cite that there has been no substantive response from the Office about the Declarations. The Decision ignores the Board's previous order and remands for the Examiner to answer the Declarations [10/13/95]. Despite said order for a substantive answer from the Examiner to the Declarants' comments about operability and utility -- have been retroactively nunc pro tunc ignored by the Board. The Declarations discuss a monitored vibrating electrode, its operability, utility, and the verified operation of the present invention. These were the Applicant's response to the examiner (and now the Board). The Office has not responded with specificity. The Remand Order from the Board has been substantively ignored. The Decision simply ignores the Declarations. The Decision is flawed because it is noncompliant, ignores the Board's two previous remand orders, and does not answer the Declarations submitted by Applicant about the present invention's operability and utility. The Decision fails to cite the Board's previous Orders and the most relevant Declarations. Thus, the Decision is flawed because it is noncompliant with the Office's own rules, Federal law, and the Board's previous Orders.

## UNDISPUTED FACT: THE IGNORED DECLARANTS HAVE FOUND THE OFFICE LACKING (PETITIONS)

25. The egregious "Letter" by Mr. Knight correctly states:

*"The decision dismissed the petition as moot in view of Applicant's timely-filed reply to the Advisory Action(s). The petition requested (1) the Office enforce the October 13, 1995 Order of the Board remanding the application to the Examiner (dismissed as moot as the Examiner complied with the Order); (2) the Office enforce the MPEP 706.07(j), which requires an examiner during the examination of a pro se case, when it becomes apparent that there is patentable subject matter disclosed in the application, to draft one or more claims (dismissed because it had not become apparent that patentable subject matter had been disclosed), and 706.03(d), which relates to rejections based upon 35 U.S.C. § 112 second paragraph (dismissed as moot because rejections based thereon are no longer applicable), and (3) the Office reverse a series of decisions not specifically addressed in the petition (dismissed in that no specific decisions had been addressed).*

*"Mr. Swartz filed a third Petition to the Commissioner Pursuant to 37 CFR 1.181 on April 30, 1996, which was treated as a petition requesting that Examining Group 2200 be recused from the above-identified application. The petition was dismissed in a decision mailed October 30, 1996.*

*Mr. Swartz filed a fourth Petition to the Commissioner Pursuant to 37 CFR 1.181 to "Avoid the Appearance of Impropriety," which was again treated as a petition requesting that Examining Group 2200 be recused from the above-identified application, and which was dismissed in a decision mailed January 30, 1997.*

*"Mr. Swartz filed a fifth Petition to the Commissioner Pursuant to 37 CFR 1.181 for a "Finding of Facts and Implementation of the Board's Previous Orders," on February 11, 1997, and a sixth Petition to the Commissioner Pursuant to 37 CFR 1.181 for a "Finding of Facts and Implementation of the Board's Previous Orders," on February 24, 1997.*

The Petitioner (supported by Declarants whose Declarations have been ignored), like the Board of Patent Appeals, has also found the Office lacking. One of the complaints has been that the Office did not respond substantively, instead continuing to remove submitted documents, continuing to be disingenuous, continuing to be deceptive as in Mr. Knight's "Letter" (*vide supra*, *vide infra*).

## UNDISPUTED FACT: MR. KNIGHT UNENCUMBERED BY ACCURACY OR COMPLIANCE

26. In said "Letter", signed by Mr. Anthony Knight, no mention is made of Mr. Knight's title. Is he an Attorney at Law? This is, and will be, relevant because Mr. Knight appears not to be encumbered by accuracy, compliance with the law, or integrity in the way he has handled this matter.

The first example is proven by the many disingenuous statements by Mr. Knight which will be documented in detail, below. In Mr. Knight's

non-responsive, "Letter", containing untrue and self-serving statements, the following example resonates through: a complete failure to substantially address the actual issues in the submitted Petition to the Commissioner--which was about Mr. Knight. Despite Mr. Knight's false description of the Petition, the Petitioner, on April 6, 2011, respectfully --and reasonably (*vide infra*)--requested relief from Mr. Jack Keith's false statement made on federal documents sent through the US mail, apparently to discriminate and obstruct justice. One of Mr. Knight's falsehoods purports that the above-entitled application file was abandoned when it never was.

A second was that the Petitioner requested a recusal of Mr. Jack Keith and his Group Art. The reasons included that the latter has displayed an extreme, systematic abuse of Applicant under color of law without even an iota of accountability. This systematic improper action by him and his Group Art have resulted in a growing, indelible appearance of impropriety and more, which led to said Petition for an internal investigation due to said appearances of impropriety and obvious obstruction of justice.

27. The second example is proven by Mr. Knight's utter failure to even honestly report the complete contents of the docket of the above entitled case. This is coupled with Mr. Knight's failure to honestly report the fact that there has been a Continuation of the above entitled case, which arose from the above-entitled action; i.e. that this invention has NEVER BEEN ABANDONED. The above entitled invention, '970, now '765, is presently a continuation in the U.S. Patent Office. '765 is mentioned in the Petition, and it is relevant. Yet, this is not mentioned in the "Letter". As discussed previously, the false statements which have been made (and attempted to be covered up by the "Letter") by Mr. Knight were made to negatively effect case '765.

Attention of the Court, Congress and investigators is made to one important fact. What is the relevance of '765 that it is not even mentioned? In case '765, which is a Continuation of the above entitled action, the Appellant's *pro se* Appeal Brief is presently being withheld (corruptly, and with actions additionally consistent with further obstruction of justice and misprision of felony) because therein are described improper, felonious actions ... by none other than Mr. Knight and his agents. As such, there is one interpretation, one hypothesis that must be tested by deposition and *duces tecums*. The "Letter" flagrantly, egregiously attempts to obstruct justice. This is an affront to American jurisprudence.

28. The third example is proven by Mr. Knight's impetuosity, and willingness to be neither partial, nor completely, truthful. It is a proven fact (*vide infra*) that Mr. Knight's "Letter" contains further false statements. Therefore, there is indelible impropriety, as Mr. Knight actually rules on himself on a Petition which was sent to the Commissioner of Patents. This is further corroborated because said "Letter", signed by Mr. Anthony Knight, was contrived to cover up HIS own obstruction of justice, HIS own false statements made on federal documents.

It is apparent that, to avoid accountability, Mr. Knight, buoyed only by false statements, misstatements, and disingenuities, on a federal document.

**UNDISPUTED FACT: MR. KNIGHT IS UNCONCERNED REGARDING  
IMPROPERLY REMOVED/MISLABELED EVIDENCE**

29. Second, it is obvious that the USPTO has no (zero) accountability when Mr. Knight writes "Mr. Swartz provides that no explanation was given for these irregularities". An Exhibit was given with the Petition and is included here (Exhibit "F"). It is not for the Petitioner to explain the "irregularities". The corrupted USPTO docket is the responsibility of the USPTO. It is incumbent upon the USPTO, the Commissioner of Trademarks and Patents, to tell the truth.

It is for Mr. Knight to say when he first was aware of this. Accountability is required by ... Mr Knight (since he intercepted a Petition to the Commissioner

before said Individual, as an Officer and Individual, was named as a Defendant in a civil court case). Instead of accountability or sincerity or compliance with the Law, Mr. Knight's "Letter" is odious as it condones egregious irregularities, by the Office, in its entries out-of-order temporally, indicating that the purported "Docket" was not made contemporaneously --- and in defiance of the date stamps of several returned postal cards --- and, more importantly, in violation of 18 U.S.C. 2071.

**UNDISPUTED FACT: MR. KNIGHT ATTEMPTS TO COVERUP  
REMOVED/MISLABELED EVIDENCE USING NON-CAUSAL ARGUMENT**

30. Third, Mr Knight knows better, especially since he represents the government. It is improper, with a typhoon of impropriety for Mr. Knight to attempt to use so-called-fabricated-"evidence" crafted from several years before the serendipitous discovery of the actual matter under discussion: to wit, the Office's wrongdoing. NOTA BENE: There WAS wrongdoing by someone in the USPTO. The Office had failed to log in or consider all the relevant submitted Declarations - despite a previous ignored Remand by the Board to do just that. Then, having be "caught" by said exposure, the Office failed to Respond in the Supreme Court (twice)

Mr. Knight's contrived "Letter" shows no accountability, but in its stead substitutes utter disingenuity and systematic misstatements. Furthermore, said contrived letter has been sent through the US mail to obstruct justice under color of law.

**UNDISPUTED FACT: MR. KNIGHT ATTEMPTS TO COVERUP  
REMOVED/MISLABELED EVIDENCE BEFORE SCOTUS**

31. The egregious "Letter" by Mr. Knight disingenuously states

*"Further to this, Mr. Swartz was presented with the opportunity to raise these issues with the United States Court of Appeals for the Federal Circuit. The United States Court of Appeals for the Federal Circuit affirmed the examiner and the Board in an Opinion mailed November 8, 2000. Furthermore, the Court of Appeals for the Federal Circuit addressed this very same issue in the opinion. .... Mr. Swartz now, more than ten (10) years after the Board affirmed the examiner's rejections, and thereafter denied applicant's request for a rehearing on the matter, attempts to litigate matters appropriately addressed by the Board, by way of the present petition."*

These statement in the "Letter" are disingenuous. First, wrongdoings on the part of the USPTO were ONLY discovered, and then entered into the record, in the federal appellate court.

Second, on January, 18, 2001, Appellant filed a Petition for Certiorari (\*) to the Supreme Court of the United States (00-1191). (\*) - under violations of United States Constitution [Article I, Section 8, Clause 8, Article III, Article IV, and the Fifth and Fourteenth Amendments. In addition, Appellant filed a Request for Consideration. Said Petition for Certiorari was made regarding the then recent-discoveries of misconduct, mislabeling of submitted Evidence at the USPTO. The Office did not respond to coverup the egregious behavior of the USPTO. As the Swartz states,

**"The "Letter" contains statements which are not accurate. ... Despite what Mr. Knight purports, I filed in federal appellate court in a timely fashion [00-1108] on November 8, 2000. The US Patent Office was found to have a corrupted docket on subpoena. Therefore, on January, 18, 2001, I filed a Petition for Certiorari (\*) to the Supreme Court of the United States (00-1191). The US Patent Office defaulted."**

**UNDISPUTED FACT: MR. KNIGHT ATTEMPTS TO OBSTRUCT JUSTICE**

32. The "Letter" by Mr. Knight disingenuously states

*"Proceedings in the present application were properly terminated, and the application is properly held abandoned. No further consideration will be given to this matter as it relates to the abandonment of this case."*

The case was NOT abandoned since it was the USPTO who failed to respond [Exhibit "C"].

NOTA BENE: The USPTO (Mr. Knight, again??) did refuse to respond to the Appellant's Petition for Certiorari (00-1191). Said the Clerk to SCOTUS: It was the USPTO's first time in history to have defaulted.

Consideration must be made by serious, impartial investigatory bodies as to the reason why the USPTO defaulted. It is probably because it became clear that the Office had failed to log in all the relevant submitted Declarations.

NOTA BENE: According to the clerk at the US Supreme Court at that time, this event of default was "the first time in history the USPTO (had) ever (so) defaulted". The implication is: "*Fatetur facinus qui judicium fugit.*"

Therefore, third, by misreporting in his "Letter", Mr. Knight has now made false and/or incomplete statements on a federal document to obstruct justice. This is misprision of felony. The USPTO is now represented, by his choice of intercepting a Petition to the Commissioner and calling it a "Letter". Going forward, and back to the time of his knowledge of this matter, Mr. Knight now admits that he has responsibility both as an Officer and as an Individual.

### **UNDISPUTED FACT: MR. KNIGHT ATTEMPTS TO PREVENT JUSTICE**

#### **33. The egregious "Letter" by Mr. Knight disingenuously states**

*"As to Mr. Swartz's argument that there was evidence withheld from the Board and Court, and his request for recusal of the examiner and the Art Unit, the present petition is not the proper forum to address allegations of withheld evidence. Applicant was provided several opportunities to raise this issue during prosecution of the application, and during the appeal process. For Mr. Swartz to assert that there was evidence withheld from the Board and Court, more than ten (10) years after the United States Court of Appeals for the Federal Circuit affirmed the examiner and the Board, when he was before both the Board and the Court and could have raised these issues, is without merit since both the Board and the Court have heard Mr. Swartz on this issue."*

These statements in the self-serving "Letter" reek with indelible, self-serving obstruction of justice. Applicant (Appellant, Petitioner) has NEVER been provided any forum or venue to raise this issue during prosecution of the application, and during the appeal process because the irregularities BY THE USPTO were ONLY discovered in federal appellate court. It is ironic (at best), with elements of obstruction of justice and disingenuousness by Mr. Knight because in '765, the Appeal Brief of a *pro se* Appellant has been withheld.

**UNDISPUTED FACT: MR. KNIGHT'S AGENDA UNCLEAR**

34. On information and belief, Mr. Knight and his agents are presently withholding that Appeal Brief from the court, and have fabricated the present odious "Letter", which is non responsive to the submitted Petitions, in part to satisfy an unclear agenda on the part of the USPTO in an effort to discriminate and hurt the Petitioner, and the American people because the invention involves clean energy rather than conflict oil.

**UNDISPUTED FACT: MR. KNIGHT AVOIDS PAPER TRAIL**

35. On information and belief, Mr. Knight conveniently mislabeled the Decision as a "Letter" for two reasons.

First, so that he can give himself an excuse to record it, albeit, inaccurately -- or not record it at all, as has been the behavior at the USPTO for one Group Art (in fact, what this is partially about in the first place).

Second, so that Mr. Knight can avoid a paper trail by relabeling a legal document involving corruption at the USPTO as "Letter".

**UNDISPUTED FACT: SYSTEMATIC APPEARANCE OF IMPROPRIETY**

36. Mr. Knight's "Letter" is deliberately attempting to change the accuracy of federal documents to protect himself (and possibly others). Mr. Keith's fabrication is another salient part of an effort to obstruct justice. These appear to be a small group at the USPTO, ruling on themselves, at variance with the rules, in defiance of all Law, ignoring the stamps of the US Patent Office mail Dept., and the wisdom of Congress and SCOTUS, as the few in the Office wage "war" against the American people and the directive of every single US President since 1989.



### **UNDISPUTED FACT: CAPRICIOUS "LETTER" BY MR. KNIGHT**

37. The egregious, fraudulent "Letter" is built upon knowingly false statements. As such it is an unethical, illegal, improper, "decision" which is arbitrary, selective, capricious, and is discriminatory with obvious civil right violations under color of law [U. S. v. Price, 86 S. Ct. 1152, 1157; 5Th Amendment and 14th Amendment; also "equal protection" clauses in *Frontiero v. Richardson*, 93 S.Ct. 1736, 411 U.S. 677; *Weiss v. Weiss*, 436 N.Y.S. 2d. 862, 52 N.Y. 2d. 170 (1981)], with serious implications [*Gass v. Lopez*, 95 S. Ct 729; *Wood v. Strickland*, 95 S Ct 952; *U.S. v. Price*, 86 S Ct 1152, 1157, Footnote 7; *Griffin v. Breckenridge*, 91 S Ct 179D; *Gamez v. Toledo*, 42 U.S.C. §1983, and *Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics*].

By contrast, the Appellant notes that the U.S. Supreme Court has ruled that any *pro se* litigant is entitled to less stringent standards [U.S. Rep volume 404, pages 520-521 (72)].

### **UNDISPUTED FACT: APPEARANCE OF IMPROPRIETY IN THE "LETTER"**

38. The Office's actions and behavior, and the contrived "Letter"; do not comport with any notion of fair play or justice. Many of these statements by the Examiner are not true. The Examiner and his supervisor, and Mr. Knight, know this.

DTRA disagrees with the Examiner. DARPA disagrees with the Examiner. The US Navy disagrees with the Examiner. Thousands of scientists disagree with the Examiner. The Examiner and his supervisor know this. The literature supports the "existence" of the "cold fusion" effect(s). The Examiner and his supervisor know this, and this is defined as 'obstruction of justice', 'discrimination', and 'misprision of felony'.

The Office's action are improper and void of compliance with the preexisting standards for review for patentability with respect to resolving operability by the Office. By ignoring standards of patentability, the decision is arbitrary, selective, and capricious and encourage discrimination and civil rights

violations under color of law [U. S. v. Price, 86 S. Ct. 1152, 1157] including due process and Equal protection under the law [5Th Amendment and 14th Amendment] and other "equal protection" clauses [Frontiero v. Richardson, 93 S.Ct. 1736, 411 U.S. 677; Weiss v. Weiss, 436 N.Y.S. 2d. 862, 52 N.Y. 2d. 170 (1981)], with serious possible implications [Gass v. Lopez, 95 S. Ct 729; Wood v. Strickland, 95 S Ct 9S2; U.S. v. Price, 86 S Ct 1152, 1157, Footnote 7; Griffin v. Breckenridge, 91 S Ct 179D; Gamez v. Toledo, 42 U.S.C. §1983, and Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics].

By systematic failure to use a uniform standard of review for patentability, by ignoring Declarants, and by ignoring its own rules for patentability, the Office has denied due process and thereby Equal protection under the law [United States v. Nixon, 418 U.S. 683 (1974)].

#### **UNDISPUTED FACT: VIOLATION OF 18 U.S.C.§1001**

39. The statements by Mr. Knight in his "Letter" are false, and is a violation of 18 U.S.C.§1001. They disagree with the actual record.

#### **UNDISPUTED FACT: MR. KNIGHT HAS VIOLATED 18U.S.C. 2071**

40. Mr. Knight has erred by ignoring Missing Documents that the Office had received [18 U.S.C. 2071] several ways.

The Office records (A1-A7; Exhibits before SCOTUS where the USPTO defaulted), and the analysis of said records (A8-A11), reveals the Office's records are unreadable, chaotic, and inaccurate; and have been unfair with the Appellant.

As many as thirty seven (37) of Appellant's pleadings and Declarations were not recorded. The Board has confirmed this in a remand (A82).

As many as six (6) pleadings of, or communications by, the Office were not sent to the Appellant. The analysis reveals that, curiously, seven (7) of the Office's entries are out of order temporally, indicating that the purported "Docket" was not made contemporaneously. Finally, analysis indicates that eight (8) entries are bizarre with fractional numbers used, or no numbers used. This may be a sign consistent with pleadings which were "lost" or misplaced and were "rediscovered" after remand from the Board or the demands of this Court.

The errors cited in Document sheet from the Office [A1-A7, including the misnumbering] was brought to the attention of the Commissioner and the Board, but have been systematically ignored. Applicant repeatedly asked for the Office's copy of the Office's Docket Sheets to see why, or for correction of this matter, and was refused. Applicant never received an answer despite repeated requests -- and Appendix A1-A7 (corrected A8-A11, proof A12-A17) is the reason why - coverup of negligence.

Examiner Wasil informed the Applicant that he did not see some of these submitted documents (A8-A11) consistent with the above and that the withholding of the Applicant's patent allowance came "from above" him. The Examiner also informed Applicant that records sent were not in the documents which he had reviewed - despite the date stamps (A12) which demonstrate that said documents reached and entered the building where the Examiner works in a timely fashion.

These are violations of 18 U.S.C.2071.

**UNDISPUTED FACT: MR. KNIGHT HAS VIOLATED 18 U.S.C. §371  
(CONSPIRACY TO DEFRAUD)**

41. Mr. Knight's "Letter" has the incorporation of fraud after being informed. Thus, Appellant has demonstrated all required elements satisfying Fed. R. Civ. P. 9(b). This is important because federal law criminalizes conspiracy to defraud, 18U.S.C. §371, which can be the predicate to a civil RICO action.

Mr. Knight's "Letter" is a fraudulent misrepresentation issued through mail, made even after statements were shown to be false through submission of enough exhibits satisfying the rigorous requirements of Fed. R. Civ. P. 9(b) (\*\*10). In similar cases, Mr. Knight's behavior would make for an exceptional case pursuant to 35U.S.C. §284 and §285, thus entitling Appellant to treble damages as well as the recovery of costs and fees incurred.

**UNDISPUTED FACT: MR. KNIGHT HAS VIOLATED 18 U.S.C. §1503  
(OBSTRUCTION OF JUSTICE)**

42. 18 U.S.C. §1503 is a criminal statute to which there is no private cause of action but Mr. Knight's "Letter" shows systematic strong-arm tactics and obstruction of justice used to cover up and delay this matter, and have therefore violated 18 U.S.C. §1503. Appellant notes that there has been specificity and particularity of all elements for violation of 18 U.S.C. §1503 (Obstruction of Justice). This is important because federal law criminalizes obstruction of justice, 18 U.S.C. §1503, which can be the predicate to a civil RICO action.

**UNDISPUTED FACT: MR. KNIGHT'S DISINGENUOUS STATEMENTS ARE  
OBSTRUCTION OF JUSTICE**

43. Mr. Knight's fabricated statements in said present "Letter" are at variance with the record. They herald obstruction of justice, contempt of US Law, judicial process, is improper and thoroughly disrespectful of the previous Order from the federal court and the Petition for Certiorari to which the USPTO failed to respond, and continues his usurpation of Constitutional and civil rights by conspiracy under color of Law, and conspiracy to defraud the United States of America, its Congress and its people. In fact, there are serious implications, as discussed below.

He fails to use a uniform standard of review and has denied due process and Equal protection under the law [United States v. Nixon, 418 U.S. 683 (1974)] with serious implications [Gass v. Lopez, 95 S. Ct 729; Wood v. Strickland, 95 S Ct 952; U.S. v. Price, 86 S Ct 1152, 1157, Footnote 7; Griffin v. Breckenridge, 91 S Ct 179D; Gamez v. Toledo, 42 U.S.C. §1983, and Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics].

### **UNDISPUTED FACT: DESTRUCTION OF EVIDENCE AND ITS COVERUP**

44. Mr. Knight is now involved in a coverup of this matter. In the present matter, Mr. Knight has made his false statements which he expects to be the end of the matter. However, it is obstruction of justice. It is fraud which has gone through the US mail to the Commonwealth of Massachusetts where the Courts are now ready to adjudicate, if necessary (\*\*\*\*).

(\*\*\*\*) - The Appellant continues with his strong interest in judicial economy, but his patience is now stretched over two decades by Office abuse, and Office false statements, and Office obstruction of due process, in the above-entitled application. Mr. Keith and those involved, as both Officers and Individuals, are reminded of Massachusetts General Law 93A which is invoked because Applicant's (and Appellant's) checks were cashed.

### **UNDISPUTED FACT: PROBABLE NEED FOR CIVIL RIGHTS TRIAL**

45. Mr. Knight's fabricated "Letter" with false innuendo following disingenuous statements does not comport with any notion of fair play or justice. He has substituted his fabricated false statements, sent through the US mail, to obstruct justice, to discriminate, to harass, to conspire, and for possible nefarious reasons in place of the truth.

May the Court, and Attorneys General note that Evidence has been removed by someone at the USPTO. Mr. Knight is now involved in attempting to coverup this up by disingenuous statements.

46. The ignored Ahern Declaration states,

"I sympathize with the Applicant, Dr. Mitchell Swartz. I can understand his frustration with one USPTO examiner, namely, Mr. Palabrica, who was an ex-aminer for my filing of a patent application on an invention involving high energy density discharges and their intensification by high voltage pulses in liquids. For this invention, I drew on the vast experience of decades of exploding wire experiments and other high energy density studies. I based the invention on the same principle that is routinely observed in femtosecond laser-matter interactions. This invention was useful because energy could be extracted. My patent application was taken by Mr. Ricardo Palabrica."

"The Examiner Mr. Palabrica denied my application and dismissed all of my claims on the grounds that he deemed that it was "cold fusion". My technology, my scientific explanations, and my arguments were summarily essentially ignored and dismissed by Mr. Palabrica, as he appeared to have pre-judged my technology and invention as part of the 'cold fusion' phenomenon. It was not. I did not even use those words. I did not even use the word "fusion" in my filing. I did use the metal palladium and heavy water, but the similarities ended there."

The ignored Ahern Declaration states,

"In discussions, Mr. Palabrica implied that if I removed all references to palladium and heavy water that a successive patent application would be allowed. Mr. Palabrica said that a new filing without the words 'fusion', 'palladium' and 'heavy water' would have a much better chance of moving forward. This was an odd request by Mr. Palabrica because to compliance to his demand would have made a second filing useless by removing the very materials used. Because Mr. Palabrica apparently has the power to decide what an inventor's technology would be, I gave up in frustration even though I believed, and continue to believe, that the technology was sound. "

"I am the inventor of over 20 patents, and have never experienced such a response from any Examiner before, like I have from Mr. Palabrica. Mr. Palabrica's response was inappropriate for a Patent Examiner. The comments involve attempting to change an invention by overstepping his directives and acting as a 'protector' of scientific knowledge."

"The Applicant, Dr. Mitchell Swartz appears to be laboring under the same misuse of authority."

#### **UNDISPUTED FACT: CONSPIRACY TO DESTROY AN ENERGY PRODUCTION SOURCE FOR CONFLICT OIL**

47. The Office has used any and all means to stop the above-entitled (and similar) patent(s) because they involve energy production. Because energy production is involved, some in the US Patent Office will not allow any notion of fair play or justice. The Office has achieved the coverup of energy production only by its systematic and unrelenting use of false statements (as in the present "Notice") and other fraud the extent of which we have seen only the "tip of the iceberg", such as what was revealed in the federal appellate court as discussed above. This is a serious matter because the USPTO and the Board of Patent Appeals and the writers of the SAW Memorandum and possibly another group are operating outside of the US Constitution, the Congress, and the Law, to create a biased, two-tiered discriminatory system.

48. The *pro se* Appellant has been compliant, timely, and complete. Unfortunately, the present flawed decision, a flawed decision mislabeled as a "Letter", as it stands, has both the salient appearance of impropriety and obstruction of justice. The Office, though the "Letter" signed by Mr. Knight, has ignored the facts, several laws and the USPTO's own rules, including but not limited to:

There have been violations by the Office of MPEP 1206.

There have been violations by the Office of 18 U.S.C. §1001.

There have been violations by the Office of the 5th Amendment and 14th Amendment; also "equal protection" clauses, and 42 U.S.C. §1983.

There have been violations by the Office of Title 18 U.S.C., Sections 1831 and 1832.

The Office has ignored U.S. Rep volume 404, pages 520-521 (72).

COUNT #1 - Violation of 18 U.S.C. §1001 by Mr. Anthony Knight

COUNT #2 - Regulatory Abuse by Mr. Anthony Knight

COUNT #3 - Obstruction of Justice by Mr. Anthony Knight

COUNT #4 - Misprision of Felony by Anthony Knight

COUNT #5 - Obstruction of Justice by Mr. Anthony Knight

COUNT #6 - Misprision of Felony by Robert W. Bahr

COUNT #7 - Misprision of Felony by Donald T. Hajec

COUNT #8 - Misprision of Felony by Past Director Jon W. Dudas

COUNT #9 - Misprision of Felony by Director of Patents

49. Therefore, as discussed above, the flawed decision, "Letter" is in error and should be corrected. This Petition is an attempt by the Petitioner for judicial economy because said false statements by Mr. Knight directly effect other cases presently before the Board of Patent Appeals.

50. Appellant notes that the U.S. Supreme Court has ruled that any *pro se* litigant is entitled to less stringent standards [U.S. Rep volume 404, pages 520-521 (72)].

WHEREFORE, given the evidence in the record, cited in this Petition and supported by Affidavit (so far all ignored) proving that the Appellant is correct,

and that the "Letter" misrepresents the record and is not consistent with proven facts in the record, the Applicant (now Appellant) respectfully requests

i) relief from the Mr. Knight's false statements made on federal documents sent through the US mail to obstruct justice, and

ii) a recusal of Mr. Jack Keith and his Group Art with their systematic abuse of Applicant under color of law without even an iota of accountability by the USPTO resulting in a growing indelible appearance of impropriety, and

iii) properly transferring the Dr.Palabrica-sequestered '765 Appeal Brief to the Board of Patent Appeals immediately consistent with the checks which were cashed and compliant *pro se* Appeal Briefs were delivered.

iv) an internal investigation because of the appearance of impropriety and obvious obstruction of justice.

Respectfully submitted,

---

Mitchell Swartz, ScD, MD, EE  
*pro se*, Appellant

### **CERTIFICATE OF MAILING [37 CFR 1.8(a)]**

December 5, 2011

To Whom it Does Concern:

I hereby certify that this correspondence will be deposited with the United States Postal Service by First Class Mail, postage prepaid, in an envelope addressed to

"Box Appeal  
The Commissioner for Patents  
Alexandria, VA  
22313-1450" on the date below.

Thank you. Sincerely,

December 5, 2011

M.Swartz



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Inventor : Mitchell R. Swartz  
Serial no. 07/ 760,970 Filed: 09/17/1991

For: METHOD AND APPARATUS  
TO CONTROL ISOTOPIC FUEL  
LOADED WITHIN A MATERIAL

Box Appeal  
Commissioner for Patents  
P.O. Box 1450  
Alexandria VA 22313-1450

December 5, 2011

**DECLARATION OF DR. MITCHELL SWARTZ  
SUPPORTING PETITION to the COMMISSIONER**

I, Mitchell R. Swartz, declare that I am a citizen of the United States of America and the inventor of the invention described in the above-entitled application.

1. I have a background in energy production, electrical engineering, material science, electrochemistry, nuclear physics, and medicine. I have worked in these fields for almost thirty years, and have worked on medical and scientific experimental projects at the Massachusetts Institute of Technology, Massachusetts General Hospital, Harvard Medical School, and elsewhere.

2. I received a Letter dated November 30, 2011 [Exhibit "A"] signed by Mr. Anthony Knight in response to my submitted Petition.

3. The "Letter" is not substantively responsive to the actual issues in my submitted Petition to the Commissioner.

4. The "Letter" contains statements which are not accurate.

5. Despite what Mr. Knight purports, I filed a complete and proper reply to the final Office action mailed September 2, 1993. The date stamp of the USPTO confirms receipt. The substance of the reply was simply, substantively ignored. There was no abandonment.

6. Despite what Mr. Knight purports, the Board reversed the Examiner's rejections of claims 25 through 48 pursuant to 35U.S.C. §102 and 35U.S.C. §103.

7. Despite what Mr. Knight purports, I filed in federal appellate court in a timely fashion [00-1108] on November 8, 2000. The US Patent Office was found to have a corrupted docket on subpoena. Therefore, on January, 18, 2001, I filed a Petition for Certiorari (\*) to the Supreme Court of the United States (00-1191). The US Patent Office defaulted.

I declare that all statements herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signature of Inventor:  
December 5, 2011

---

Mitchell R. Swartz, ScD, MD, *pro se*  
Weston, MA



MITCHELL R. SWARTZ  
16 PEMBROKE ROAD  
WESTON MA 02193

**MAILED**

**NOV 30 2011**

**OFFICE OF PETITIONS**

In re Application of  
MITCHELL R. SWARTZ  
Application No.: 07/760970  
Filing or 371(e) Date: 09/17/1991  
Title of Invention:  
SYSTEMS TO CONTROL NUCLEAR  
FUSION OF ISOTOPIC FUEL  
WITHIN A MATERIAL

**LETTER**

**Exhibit "A"**

This is a letter in response to the Petition to the Commissioner pursuant to 37 CFR 1.181, filed April 8, 2011, which is best characterized as a letter to the Director of the USPTO in light of the decision of the Court of Appeals for the Federal Circuit.

#### Background

The above-identified application became abandoned for failure to timely and properly reply to the final Office action, mailed September 2, 1993 wherein the Examiner rejected claims 25-48. The Office action set a three (3) month period for reply, and provided for extensions of time under 37 CFR 1.136(a) (the period for reply was restarted in an Office communication mailed September 8, 1993).

Mr. Swartz, the applicant, filed replies to the Office action on November 5, 1993 and December 3, 1993; however, the replies failed to place the application in condition for allowance. Applicant was so notified in Advisory Actions mailed November 23, 1993 and December 22, 1993 respectively. Accordingly, the application became abandoned on December 4, 1993, for failing to file a complete and proper reply to the Office action.

Applicant filed a Petition to the Commissioner under 37 CFR 1.181<sup>1</sup>, and a Notice of Appeal to the Board of Patent Appeals and Interferences ("BOARD"), in response to the Office action, on January 7, 1994, along with an Amendment. The Amendment failed to place the application in condition for allowance. Applicant was so notified in an Office communication mailed February 25, 1994, and re-mailed March 1, 1994. The Office communication extended the period for reply to the Office communication mailed September 8, 1993, to four (4) months from the mail date of the Office communication.

<sup>1</sup> The petition requested the Office re-set the reply period set forth in the Advisory Action mailed December 22, 1993.

The date stamp of the U. S. Patent Office on this postal card will indicate receipt of:

- 1) Response of Applicant to Communication from Examiner (September 6, 1993) with
- 2) Request for Expedited Procedure - 37 CFR 1.116 including
- 3) Amendment Under Rule 116, and a
- 4) Certificate of Mailing upon the last page.
- 5) Declaration of Dr. Eugene F. Mallove
- 6) This postcard for the Date stamp of U. S. Patent Office

Mitchell R. Swartz  
Mailed: November 2, 1993  
Serial No: 67/760,970  
Filed: September 17, 1991

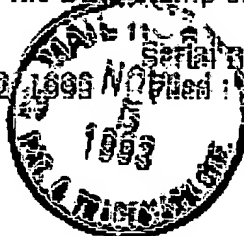


Exhibit "B"

Exhibit "C"

The date stamp of the U. S. Patent Office on this postal card will indicate receipt of:

- 1) REPLY BRIEF TO EXAMINER'S ANSWER (pertinent to 1-1993)
- 2) REPLY BRIEF TO EXAMINER'S ANSWER (pertinent to 1-1993)

with a Certificate of Mailing on the last page

- 3) REPLY BRIEF DECLARATION OF DR. MITCHELL R. SWARTZ
- 4) DECLARATION OF DR. MITCHELL R. SWARTZ
- 5) Forms PTO-1449 for Expedited Act
- 6) Copies of Art.
- 7) Copy of VGR Vantage - containing BDC and C
- 8) This postcard for the date stamp.
- 9) Copy of this postcard

Dr. Mitchell R. Swartz  
Serial no: 67/760,970  
Filed: September 17, 1991

Mailed: April 23, 1994

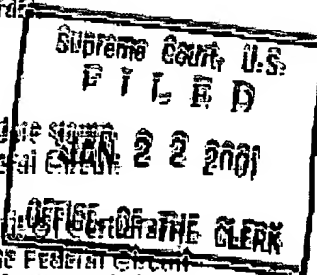


Exhibit "D"

The date stamp of the Supreme Court of the United States on this postcard will indicate receipt of:

- 1) 40 copies Petition for a writ of certiorari
- 2) the Docket No. Rule 28(a),
- 3) a Certificate of Service,
- 4) a Notice of Appearance, and
- 5) This Self-addressed postcard for the Date stamp of the U.S. Court of Appeals for the Federal Circuit

Swartz v. Dickinson, On Petition For A Writ of Certiorari to the United States Court of Appeals For The Federal Circuit [10-1107 and 0-1108] --- Mailed: January 18, 2001



# SEARCHED

Class	Sub.	Date	Exm.
376	100 245 248 <del>250</del> 255 258 263 264 267 246 252 242	10-11-91  update 4-4-92	<del>57</del>
73	573 580 657 65		
177	210 FB 216-219 222 clg: 11		
164	222 230 197 198 129-2 129-3 153-1 clg: 4-6 clg: 11		
429	90		
526	344 345 346 347 348 349 350 351 352 353 354 355		

## INTERFERENCE SEARCHED

Class	Sub.	Date	Exm.

33. <del>Decision</del>	1/18/81
34. <del>No Fee</del>	1/18/81
35. <del>Suppl. Fee</del>	1/18/81
36. <del>14. Fee</del>	1/18/81
37. <del>Decision</del>	1/18/81
38. <del>Fee</del>	1/18/81
39. <del>Fee</del>	1/18/81
40. <del>Fee</del>	1/18/81
41. <del>Fee</del>	1/18/81
42. <del>Fee</del>	1/18/81
43. <del>Fee</del>	1/18/81
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98. <del>Fee</del>	1/18/81
99. <del>Fee</del>	1/18/81
100. <del>Fee</del>	1/18/81

Exhibit "E"

The date stamp of the United States Patent Office  
on this postcard will indicate receipt of:

1. PETITION to the COMMISSIONER pursuant to  
37 C.F.R.1.181 with a certificate OF MAILING,
2. and a DECLARATION with PETITION  
and
3. This self-addressed stamped postcard.

Serial No: 07/ 760,970 Filed: 09/17/1991

Thank you.

December 5, 2011 Dr. Mitchell Swartz

<b>FORM PTO-1440 (modified)</b> <b>LIST OF PATENTS AND</b> <b>PUBLICATIONS FOR APPLICANT'S</b> <b>INFORMATION DISCLOSURE</b> <b>STATEMENT</b>				ATTY DOCKET NO.		Serial No.: 12/316,643	
				HDI			
				APPLICANT: Dr. Mitchell Swartz			
Filed: 12/15/2008				GROUP: 3663			
REFERENCE DESIGNATION				U.S. PATENT DOCUMENTS			
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE
FOREIGN PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANS LATION
OTHER ART (including Author, Title, Date, Pertinent Pages, Etc.)							
	Grp Unit : 366 3						Swartz, M.; G. Verner, "The Phusor-type LANR Cathode is a Metamaterial Creating Deuteron Flux for Excess Power Gain", ProciCCF-14, 10-15 August 2008, Washington, D.C. Editors: David J. Nagel and Michael E. Melich, ISBN: 978-0-578-06694-3, 458, (201)
	AN						Swartz, M.R., "Metamaterial Shaped LANR-Cathodes Produce Deuteron Flux", Infinite Energy, 90, (2010)
	AO						Swartz, M.; G. Verner, "Dual Ohmic Controls Improve Understanding of 'Heat after Death'", Transactions American Nuclear Society, vol. 93, ISSN: 0003-018X, 891-892 (2005).
	AP						Swartz, M.; 1996, "Possible Deuterium Production From Light water excess enthalpy experiments using Nickel Cathodes", J New Energy, 3, 58-80 (1996)
	AQ						Swartz, M.R.; "Excess Power Gain using High Impedance and Codepositional LANR Devices Monitored by Calorimetry, Heat Flow, and Paired Stirling Engines", ProciCCF-14, 10-15 August 2008, Washington, D.C. Editors: David J. Nagel and Michael E. Melich, ISBN: 978-0-578-06694-3, 123, (2010).
EXAMINER: Examiner: /Ricardo Palabral/				DATE CONSIDERED 02/22/2012			
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of form with next communication to applicant.							

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH: /R.P./

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OTHER ART (including Author, Title, Date, Pertinent Pages, Etc.)							
	AM						Swartz, M.R.; "Electrical Breakeven from LANR Phusor Device Systems: Relative Limitations of Thermal Loss in Feedback Loop"; ISBN: 978-0-578-06694-3, 689; (2010):
	AN						Swartz, M; 1998, Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes, Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85
	AO						Swartz, M.; 1998, Patterns of Failure in Cold Fusion Experiments, Proceedings of the 33RD Intersociety Engineering Conference on Energy Conversion, IECEC-98-1229, August 2-6, 1998
	AP						Swartz, M.R. "Survey of the Observed Excess Energy and Emissions In Lattice Assisted Nuclear Reactions", J Scientific Expl.; 23, 4; 419-436 (2009)
	AQ						Swartz, M.R.; "Excess Heat and Electrical Characteristics of Type "B" Anode-Plate High Impedance Phusor-type LANR Devices"; American Chemical Society, Salt Lake City, UT; Journal of Scientific Exploration; 23, 4, 491-494 (2009)
EXAMINER: Examiner:				DATE CONSIDERED			
/Ricardo Palabrical/				02/22/2012			
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				HD1			
				APPLICANT: Dr. Mitchell Swartz			
				Filed: 12/15/2008		GROUP: 3663	
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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANS LATION
OTHER ART (including Author, Title, Date, Pertinent Pages, Etc)							
	AM						Swartz, M.; 2002, G. Verner, A. Frank, "The Impact of Heavy Water (D <sub>2</sub> O) on Nickel-Light Water Cold Fusion Systems", Proc ICCF9 Beijing, China; Xing Z. Li, pages 335-342. May (2002).
	AN						Swartz, M.; G. Verner, "Excess Heat from Low Electrical Conductivity Heavy Water Spiral-Wound Pd/D <sub>2</sub> O/Pt and Pd/D <sub>2</sub> O-PdCl <sub>2</sub> /Pt Devices", Proc ICCF-10, ISBN 981-256-564-6, 29-44; 45-54 (2006).
	AO						Swartz, M., 1997, "Noise Measurement in cold fusion systems, Journal of New Energy, 2, 1, 56-61; Swartz, M., 1996, "Definitions Of Power Amplification Factor", J New Energy, 2, 54-59
	AP						Swartz, M.; 1997, "Consistency of the Biphasic Nature ...", Fusion Technology, 31, 63-74
	AQ						Swartz, M.; 1997, "Biphasic Behavior in Thermal Electrolytic Generators Using Nickel Cathodes", IECEC 1997 Proceedings, paper #97009
	AR						Swartz, M.; "Can a Pd/D <sub>2</sub> O/Pt Device be Made Portable to Demonstrate the Optimal Operating Point?", Proc ICCF-10, ISBN 981-256-564-6, 29-44; 45-54 (2006).
	AX						Swartz, M.; 1997, "Codeposition Of Palladium And Deuterium", Fusion Technology, 32, 126-130 (1997)
EXAMINER: Examiner: /Ricardo Palabral/				DATE CONSIDERED  02/12/2012			
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of form with next communication to applicant.							

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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANS LATION
OTHER ART (including Author, Title, Date, Pertinent Pages, Etc.)							
	AM						Swartz, M., "2007 Colloquium on LANR at MIT", Infinite Energy, (2007):
	AN						Swartz, M., "2009 Colloquium on LANR at MIT, Infinite Energy, 87, 50-52, (2009):
	AO						Swartz, M. with Marwan, J. M. C. H. McKubre, F. L. Tanzella, P. L. Hagelstein, M. H. Miles, M. R. Swartz, Edmund Storms, Y. Iwamura, P. A. Mosier-Boss and L. P. G. Forsley, "A new look at low-energy nuclear reaction (LENR) research: a response to Shanahan", J. Environ. Monit., (2010)
	AP						Swartz, M.R.; Bass, R.W., "Empirical System Identification (ESID) and Optimal Control of Lattice-Assisted Nuclear Reactors," Proceedings of the 14th International Conference on Condensed Matter Nuclear Science and the 14th International Conference on Cold Fusion (ICCF-14), 10-15 August 2008, Washington, D.C. Editors: David J. Nagel and Michael E. Melich, ISBN: 978-0-578-06694-3, 497, (2010).
	AS						"2010 Colloquium on LANR at MIT Infinite Energy
	AT						"2011 Colloquium on LANR at MIT Infinite Energy
EXAMINER: Examiner: /Ricardo Palabrica/				DATE CONSIDERED		02/22/2012	
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of form with next communication to applicant.							

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<b>FORM PTO-1440 (modified)</b> <b>LIST OF PATENTS AND</b> <b>PUBLICATIONS FOR APPLICANT'S</b> <b>INFORMATION DISCLOSURE</b> <b>STATEMENT</b>				ATTY DOCKET NO:		Serial No: 12/316,643	
				APPLICANT: Dr. Mitchell Swartz			
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	AN						Swartz, M.R.; Gayle Verner, Alan Weinberg; "Non-Thermal Near-IR Emission from High Impedance and Codeposition LANR Devices"; Proceedings of the 14th International Conference on Condensed Matter Nuclear Science and the 14th International Conference on Cold Fusion (ICCF-14), 10-15 August 2008, Washington, D.C. ibid. (2010).
	AO						Swartz, M.R.; "Metamaterial Shaped LANR-Cathodes Produce Deuteron Flux"; Infinite Energy, (2010)
	AP						Swartz, M.R. and L. Forsley, "Analysis and Confirmation of the "Superwave-as- -Transitory-OOP-Peak" Hypothesis" Proceedings of the 14th International Conference on Condensed Matter Nuclear Science and the 14th International Conference on Cold Fusion (ICCF-14), 10-15 August 2008, Washington, D.C. Editors: David J. Nagel and Michael E. Melich, ISBN: 978-0-578-06694-3; (2010).
	AR						Swartz, M.R.; "Excess Heat and Electrical Characteristics of Type "B" Anode-Plate High Impedance Phusor-type LANR Devices"; American Chemical Society, Salt Lake City, UT; Journal of Scientific Exploration, 23, 4, 491-495 (2009)
	AS						DIA Report on LENR
EXAMINER: Examiner:  /Ricardo Palabrica/				DATE CONSIDERED		02/22/2012	
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of form with next communication to applicant.							

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /R.P./

<b>FORM PTO-1440 (modified)</b> <b>LIST OF PATENTS AND</b> <b>PUBLICATIONS FOR APPLICANT'S</b> <b>INFORMATION DISCLOSURE</b> <b>STATEMENT</b>				ATTY DOCKET NO.		Serial No: 12/316,643	
				APPLICANT: Dr. Mitchell Swartz			
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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANS LATION
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	AM						058-457-Affidavit-Chubb2001.pdf
	AN						058-457-FedAppellCourtSupAppx-1.pdf
	AO						058-457-Forms1440from457.pdf
	AP						058-457-Affidavit-Eox2001.pdf
	AQ						058-457-Affidavit-Mallova2001.pdf
	AR						058-457-Affidavit-Miles2001.pdf
	AS						058-457-ProofSubmittedPapersRemoved.pdf
							058-457-Affidavit-Rothwell2001.pdf
							058-457-Affidavit-Schaffer2001.pdf
							058-457-Affidavit-SwartzDec00161067.pdf
							457-1240-PetCert02212003.pdf
							457-1240-RehearingPet09012003.pdf
	AT						2006 DTRA Report on LANR/LENR Advisory Board Findings: "There is good evidence of excess heat and transmutation" Page 19 Summary of Prof David Nagel's presentation; Page 21 Summary of Dr. Mitchell Swartz's presentation; Page 22 Summary of Prof. Michael Melich's presentation
EXAMINER: Examiner:				DATE CONSIDERED			
/Ricardo Palabrica/				02/22/2012			
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of form with next communication to applicant.							

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				<b>APPLICANT:</b> Dr. Mitchell Swartz			
				<b>Filed:</b> 12/15/2008		<b>GROUP:</b> 3663	
<b>REFERENCE DESIGNATION</b>				<b>U.S. PATENT DOCUMENTS</b>			
<b>EXAMINER</b> <b>INITIAL</b>	<b>DOCUMENT NUMBER</b>	<b>DATE</b>	<b>NAME</b>	<b>CLASS</b>	<b>SUB</b> <b>CLASS</b>	<b>FILING</b> <b>DATE</b>	
<b>FOREIGN PATENT DOCUMENTS</b>							
<b>EXAMINER</b> <b>INITIAL</b>	<b>DOCUMENT NUMBER</b>	<b>DATE</b>	<b>COUNTRY</b>	<b>CLASS</b>	<b>SUB</b> <b>CLASS</b>	<b>TRANS</b> <b>LATION</b>	
<b>OTHER ART (including Author, Title, Date, Pertinent Pages, Etc.)</b>							
	AM					I. Exh.E-143-Affidavit-143-Hagelstein-2010.pdf	
	AN					I. Exh.F-143-Affidavit-143-Ahern-2010.pdf	
	AO					I. Exh.G-Affidavit-Josephson-2004.pdf	
	AP					I. Exh.H-Affidavit-Mallove-Front-2003.pdf	
	AQ					I. Exh.I-Affidavit-Miranda-2003.pdf	
	AR					I. Exh.K-Affidavit-NRLonSwartz-2006.pdf	
	AS					I. Affidavit-143-Hagelstein-2007.pdf	
	AT					I. Affidavit-937-AmCurValone.pdf	
	AU					I. Affidavit-937-Fox-AmicusBrief-2001.pdf	
	AV					I. Affidavit-937-Mallove-AmicusBrief-2000.pdf	
	AW					I. Affidavit-937-McKubre-AmicusBrief-2001.pdf	
	AX					I. Affidavit-937-Rotegard-AmicusBrief-2001.pdf	
	AY					I. Affidavit-937-Storms-AmicusBrief-2001.pdf	
<b>EXAMINER:</b> Examiner:				<b>DATE CONSIDERED</b>			
/Ricardo Palabrica/				02/25/2012			
<b>EXAMINER:</b> Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of form with next communication to applicant.							

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH: /R.R./

<b>FORM PTO-1440 (modified)</b> <b>LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT</b>				ATTY DOCKET NO. HD1		Serial No: 12/316,643			
				APPLICANT: Dr. Mitchell Swartz					
				Filed: 12/15/2008		GROUP: 3663			
REFERENCE DESIGNATION				U.S. PATENT DOCUMENTS					
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE		
FOREIGN PATENT DOCUMENTS									
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION		
OTHER ART (including Author, Title, Date, Pertinent Pages, Etc.)									
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	AN						I: Affidavit-937-Valone-AmicusBrief-2001.pdf		
	AO						I: Affidavit-976-Ahern-2008.pdf		
	AP						I: Affidavit-976-Bass-1996.pdf		
	AQ						I: Affidavit-976-Beigel-1993.pdf		
	AR						I: Affidavit-976-Fox-1995.pdf		
	AS						I: Affidavit-976-Rotegard-1994.pdf		
	AT						I: Affidavit-976-Shaw-1996.pdf		
	AU						I: Affidavit-Ahern-Letter-1996.pdf		
	AV						I: Affidavit-Kurzweil-Letter-1996.pdf		
	AW						I: Affidavit-Mallove-1994.pdf		
	AX						I: Affidavit-Mallove2Clinton-2000.pdf		
	AY						I: Affidavit-Miles-Letter-1996.pdf		
	AZ						I: Affidavit-Straus-1992.pdf		
EXAMINER: Examiner:				DATE CONSIDERED					
/Ricardo Palabrica/						02/25/2012			
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of form with next communication to applicant.									

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /R.B./

<b>Notice of References Cited</b>	Application/Control No. 12/316,643	Applicant(s) Reexamination SWARTZ, MITCHELL	Patent Under
	Examiner RICARDO PALABRICA	Art Unit 3663	Page 1 of 1

## U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-			
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

## FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					



## NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages			
	U	Department of Energy, "Report of the Review of Low Energy Nuclear Reactions," December 1, 2004			
	V				
	W				
	X				

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
 Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



## SEARCHED

Class	Sub.	Date	Exmr.
376	100 245 248 <del>250</del> 259 258 103 104 107 146 150 340	10-11-91  update 4-9-92	 
73	579 580 657 6 5		
177	210 FP 216-219 222 dig: 11		
204	222 223 197 198 129.2 129.3 153.1 dig: 4-6 dig: 11		
429	90		
356	345 348 373, 375		

## INTERFERENCE SEARCHED

Class	Sub.	Date	Exmr.

34. Notice	11/81	London
35. Suppl. Pet.	11/81	Brick
36. Ltr. re: Pet.	11/81	Brick
37. Decision on Petition	11/81	Peterson
38. Re: David...		
39. Suppl. Pet.		
40. Petition granted		
41. Petition granted		
42. Examiners' Report		
43. Petition granted	11/81	11/81
44. Reply...		
44. Decision on Petition	11/81	11/81
45. Letter	11/81	11/81
46. APJ image & text	11/81	11/81
47. Petition R. 1. 181	11/81	11/81
48. Reply Brick	11/81	11/81
49. Decision on Petition	11/81	11/81
50. Decision on Petition	11/81	11/81
51. Ltr.	11/81	11/81
52.		
53.		
54.		
55. Demand for Examination		
56. Petition Dismissed		
57. Ltr. with attachment		
58. Decision on Petition		
59. Petition		
60. Petition		



08 406457

## PATENT APPLICATION

08406457

Date  
Entered  
or  
Counted

CONTENTS

MAY 16 1995

LICENSING &amp; REVIEW

	1: Application	2/13/95
	2: <del>US</del> <i>US</i> <i>Patent</i> (132)	4/13/95
	3: <del>Access</del> Acknowledgement	June 24, 1995
	4: <del>Abstract</del> (132)	3/18/95
	5: <del>F.D.S.O. W/ATT</del>	3-20-95
8-5	6: <del>Restriction</del> (30 days)	8-5-95
	7: <del>Election</del> <i>2:6</i>	8/26/96
10-11	8: <del>Restriction</del> (30 days)	10/11/96
	9: <del>Election</del> <i>11-18</i>	11-8-96
12-19	10: <del>Response</del> <i>3 months</i>	12/24/96
	11: <del>Abstract</del> <i>11-2</i>	3/17/97
	12: <del>Prior art</del> <i>Watt</i>	3-17-97
5-9	13: <del>Final</del> <i>Response</i> (3 months)	5/12/97
	14: <del>Final</del>	5/19/97
	15: <del>Abstract</del> <i>C. 11-2</i>	5/30/97
	16: <del>Prior art</del> <i>Watt</i>	5/30/97
(denied)	17: <del>Decision</del> <i>in</i> <i>Petition</i> 1.97 (IDS)	6/26/97
10-16	18: <del>Abstract</del> <i>Abstract</i>	6-26-97
	19: <del>Abstract</del> <i>ID (N-9)</i>	7/8/97
7-21	20: <del>Abstract</del> <i>Action</i>	7/21/97
	21: <del>Response</del> <i>Petition</i> <i>R=1.181</i>	7-7-97
	22: <del>Abstract</del>	7-7-97
	23: <del>Decision</del> <i>on</i> <i>Petition</i>	8/14/97
	24: <del>Appeal</del> <i>98-2593</i>	8/4/97
	25: <del>Appeal</del> <i>Brief</i> (3) <i>11-26</i>	9-22-97
10-91	26: <del>Petition</del> <i>Non-compliance</i>	10-31-97
	27: <del>Appeal</del> <i>Brief</i> (3) <i>11-13</i>	11-13-97
5/26	28: <del>Decision</del> <i>on</i> <i>Petition</i>	5-26-97
	29: <del>Reply</del> <i>Brief</i> (3) <i>7-7</i>	6/29/98
	30: <del>Petition</del> <i>A3</i>	7/26/98
	31: <del>Suppl</del> <i>Reply</i> <i>Brief</i> (3)	8/13/98
	32: <del>Notice</del> <i>of</i> <i>Continuation</i> <i>Bill</i> <i>of</i> <i>Patent</i>	9/05/98
33	33: <del>Remand</del> <i>to</i> <i>Examiner</i> <i>OCT</i> <i>1998</i>	

## SEARCHED

Class	Sub.	Date	Exmr.
376	100 247 245 146 143	12-12-96	<input checked="" type="checkbox"/>
374	31 32 33 34		
None	update	5-5-97	<input checked="" type="checkbox"/>

34: Letter 10/23/98  
 35: Decision Board Affirm  
 36: App. for Decision Board  
 37: Hearing Denied 12/14/01  
 38: Appeal to Fed. CIR: 1-21-02

## SEARCH NOTES

	Date	Exmr.
AFS image & text	12-12-96	<input checked="" type="checkbox"/>

A4

## INTERFERENCE SEARCHED

Class	Sub.	Date	Exmr.

The date stamp of the United States Patent Office on this postcard will indicate receipt of:

- 1) Petition to the Commissioner -- 37 C.F.R. 1.181 with a Certificate of Mailing on the last page, and
- 2) Declaration of Dr. Mitchell Swartz Supporting Petition
- 3) This postal card for the stamp of the Post Office



Thank you: Mitchell R. Swartz  
S/N 08-406,457 [3/20/1995]  
Mailed: June 29, 1997

The date stamp of the United States Patent Office on this postcard will indicate receipt of:

- 1) Response To Advisory Action From Examiner
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This postal card for the stamp of the Post Office;  
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S/N 08-406,457 [3/20/1995]  
Mailed: July 1, 1997

The date stamp of the United States Patent Office on this postcard will indicate receipt of the following:

- 1) Notice Of Appeal, with
- 2) a Certificate of Mailing on the last page
- 3) A check (#384) in the amount of \$190, and
- 4) This postal card for the stamp of the Post Office

Thank you: Mitchell R. Swartz      Serial no: 08/406,457  
[3/20/95]

Mailed: July 24, 1997



The date stamp of the United States Patent Office on this postcard will indicate receipt of the following for the BOARD:

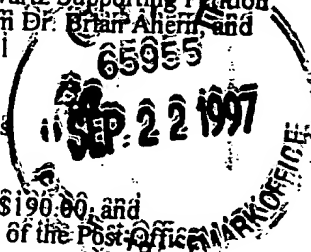
- 1) IN TRIPLICATE an "APPEAL BRIEF" with a Certificate of Mailing on the last page, and containing an Appendix A, and B containing the claims of record
- 2) Declaration of Dr. Mitchell Swartz Supporting Petition
- 3) containing herein a letter from Dr. Brian Ahern, and a letter from Dr. Ray Kurzweil
- 4) Declaration of Dr. Mallove
- 5) Declaration of Hal Fox
- 6) Declaration of Dr. Robert Bass
- 7) Declaration of Gayle Verner
- 8) Declaration of Dana Rotegard
- 9) A check (# ) in the amount of \$196.80, and
- 10) This postal card for the stamp of the Post Office

Thank you, Mitchell R. Swartz

Serial No. 08 106,457

Mailed: September 16, 1997

Filed: 3/20/1995



The date stamp of the United States Patent Office on this postcard indicate receipt of the following:

- 1) Response of Applicant with a Certificate of Mailing on the last page
- 2) Forms listing References PTO 1449 (modified)
- 3) References including IDS
- 4) This postal card for the stamp of the Post Office

Thank you, Mitchell R. Swartz

Serial no. 08/406,457 (3/20/9)

Mailed: March 12, 1997



The date stamp of the United States Patent Office on this postcard will indicate receipt of:

- 1) Response To Communication From Examiner

Dated May 12, 1997

- 2) with a Certificate of Mail on the last page, and
  - 3) References including IDS
  - 4) Petition And Certification Pursuant To 37 CFR 1.97
  - 5) Forms 1440 to the Examiner regarding the above
- This postal card for the stamp of the Post Office.

Thank you, Mitchell R. Swartz

S.N. 08-406,457

Mailed: May 26, 1997



All

The date stamp of the United States Patent Office on this postcard will indicate receipt of:

- 1) Petition to the Commissioner -- 37 C.F.R. 1.181 with a Certificate of Mailing on the last page; and
- 2) Declaration of Dr. Mitchell Swartz Supporting Petition
- 3) This postal card for the stamp of the Post Office



Thank you: Mitchell R. Swartz  
S/N 08-406,457 [3/20/1995]  
Mailed: June 29, 1997

The date stamp of the United States Patent Office on this postcard will indicate receipt of:

- 1) Response To Advisory Action From Examiner
- 2) with a Certificate of Mail on the last page; and

This postal card for the stamp of the Post Office,  
Thank you: Mitchell R. Swartz



S/N 08-406,457 [3/20/1995]  
Mailed: July 1, 1997

The date stamp of the United States Patent Office on this postcard will indicate receipt of the following:

- 1) Notice Of Appeal, with
- 2) a Certificate of Mailing on the last page
- 3) A check (#384) in the amount of \$190; and
- 4) This postal card for the stamp of the Post Office

Thank you: Mitchell R. Swartz      Serial no: 08/406,457  
[3/20/95]

Mailed: July 28 1997

A12



The date stamp of the United States Patent Office on this postcard will indicate receipt of the following for the BOARD:

- 1) IN TRIPLICATE an "APPEAL BRIEF" with a Certificate of Mailing on the last page, and containing an Appendix A and B containing the claims of record
- 2) Declaration of Mitchell R. Swartz Supporting Petition
- 3) containing therein a letter from Dr. Brian Ahern, and a letter from Dr. Ray K. Zwell
- 4) Declaration of Dr. Mallove
- 5) Declaration of Dr. Fox
- 6) Declaration of Dr. R. K. Swartz
- 7) Declaration of Dr. Gayle Warner
- 8) Declaration of Dana R. Klegard

10) This postal card for the stamp of the Post Office

Thank you: Mitchell R. Swartz

Serial No.: 08-406,457

Filed: 3/20/1995

Mailed:

Nov. 8, 1997

RECEIVED

NOV 1 1997

2200

The date stamp of the United States Patent Office on this postcard will indicate receipt of the following for the Board:

- 1) IN TRIPLICATE

Appellant "Second Reply Brief To The Office's Reply Brief (Paper #30)"

with a Certificate of Mailing on the last page

- 2) This postal card for the stamp of the Post Office

Thank you: Mitchell R. Swartz

Serial No.: 08-406,457

Filed: 3/20/1995

Mailed: July 29, 1998

BOARD OF APPEALS  
IN RE  
MICH. R. SWARTZ  
V.  
DR. B. AHERN  
ET AL  
NOV 1 1997

The date stamp of the United States Patent Office

on this postcard will indicate receipt of:

- 1) "Notice Of Correction Of Appeal Brief" with a Certificate of Mailing on the last page, and
- 2) This postal card for the date stamp of the Post Office

Thank you: Mitchell R. Swartz  
S.N.: 08-406,457 3/20/1995

Mailed: September 30, 1998

A13

225  
M1110-50  
INTERFERENCE

REFERENCE DESIGNATION										U.S. PATENT DOCUMENTS			
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE							
AA													
AB													
AC													
AD													
AE													
AF													
AG													
AH													
AI													
AJ													
AK													
FOREIGN PATENT DOCUMENTS													
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATION							
AL													
AM													
AN													
AO													
AP													
OTHER ART (including Author, Title, Date, Pertinent Pages, Etc.)													
AR							Swartz, M.; "The Relationship between Input Power and Enthalpic Behavior of Nickel Cathodes During Light Water Electrolysis"; submitted to <i>Fusion Technology</i> ; (1995).						
AS													
AT													
EXAMINER						DATE CONSIDERED							
EXAMINER: Initial if reference considered; whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of form with next communication to applicant.													

Exhibit 1  
 APPEAL FROM THE  
 UNITED STATES PATENT  
 OFFICE

[(\*\*\*) later published as Swartz, M.; 1997;  
*Fusion Technology*; 31, 63-74]

♦ Appeal No. 98-2593

A14

PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT				FILING DATE: 3/26/1995		GROUP ART UNIT: 2264	
REFERENCE DESIGNATION				U.S. PATENT DOCUMENTS			
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME		SUB CLASS	FILING DATE	
	AA						
	AB						
FOREIGN PATENT DOCUMENTS							
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY		SUB CLASS	TRANSLATION	
	AC						
OTHER ART (including Author, Title, Date, Pertinent Pages, Etc.)							
	AD			Storms E, Talcott C; Fusion Technol. 17 (1990) 680: Electrolytic tritium production.			
	AE			Swartz, "Fusors in Nuclear Reactions in Solids"; Fusion Technology to be published March 1997, vol 31, 228-236 (1997).			
	AF			Swartz, "Consistency Of The Biphasic Nature Of Excess Enthalpy In Solid State Anomalous Phenomena With The Quasi-1-Dimensional Model Of Isotope Loading Into A Material"; Fusion Technology; 31, 63-74; January 1997 issue (1997).			
	AG			Swartz, Relative Impact of Thermal Stratification; JNE 1,2; 141-143 (96)			
	AH			Swartz, "Possible Deuterium Production From Light Water Excess Enthalpy Experiments Using Nickel Cathodes"; Journal of New Energy; 1, 3, 68-80, (1996)			
	AI			Swartz, "Potential for Positional Variation in Flow Calorimetric Systems"; Journal of New Energy; 1, 126-130 (1996)			
	AJ			Swartz, "Improved Calculations Involving Energy Release Using A Buoyancy Transport Corrections"; Journal of New Energy; 1, 3, 219-221 (1996)			
	AK			Swartz, "Definitions Of Power Amplification Factor"; J New Energy; 2, 54-59 (1996)			
	AL			Swartz, "Codeposition Of Palladium And Deuterium"; submitted to Fusion Technology			
	AM			Swartz, "Relationship between ..."; submitted to Fusion Technology (1995)			
	AN			Swartz, "A Method To Improve Algorithms Used To Detect Steady State Excess Enthalpy"; M. Swartz; Transactions Of Fusion Technology; Vol 26, pp 156-159, (Dec. 1994)			
	AO			Swartz, "Some Lessons From Optical Examination Of The Pic Phase-II Calorimetric Curve"; Vol. 2, Proceedings: "Fourth International Conference On Cold Fusion"; Sponsored By Epri And The Office Of Naval Research, December (1993); Published July 1994			
	AP			Swartz, "Generalized Isotopic Fuel Loading Equations"; "Cold fusion source book: International Symposium on Cold Fusion and Advanced Energy systems"; Ed. Hal Fox; Minsk, Belarus; May (1994).			
	AQ		previously submitted	Swartz, "Isotopic Fuel Loading Coupled to Reactions at an Electrode"; Transactions of Fusion Technology; vol 26; pp 74-77; (Dec. 1994)			
EXAMINER				DATE CONSIDERED			
EXAMINER: Initial if reference considered; whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of form with next communication to applicant.							

Exhibit 2  
 APPEAL FROM THE  
 UNITED STATES PATENT  
 OFFICE

♦ Appeal No. 98-2593

AIS



## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE THE APPLICATION OF:

PAPER:

Inventor : Mitchell R. Swartz  
 Serial No.: 08-406,457  
 Filed: 3/20/1995

Group Art Unit: 2204  
 Examiner: Daniel Wasil

## ADDENDUM

Exhibit 1 - Letter from Dr. Miles, May 20, 1998
Exhibit 2 - Miles, M.; "Reply to 'Examination of Claims of Miles et al. in Pons-Fleischmann-Type Cold Fusion Experiments'", <i>J. Physical Chem B.</i> , 102, 18, 3642-3646 (1998)
Exhibit 3 - Swartz, M.; 1998; "Optimal Operating Point Characteristics of Nickel Light Water Experiments", <i>Proceedings of ICCF-7</i> , to be released July 1998.
Exhibit 4 - Swartz, M.; 1998; Improved Electrolytic Reactor Performance Using $\pi$ -Nucleon System Operation and Gold Anodes; <i>Transactions of the American Nuclear Association</i> , Nashville, Tenn 1998 Meeting, (ISSN:0003-018X published LaGrange, Ill) 78, 84-85.
Exhibit 5 - <i>Transactions of American Nuclear Society</i> , June 7, 1998; pages 82-92
Exhibit 6 - Dr. Swartz's badge as Speaker and Conference Chair at the American Nuclear Society, June 7, 1998
Exhibit 7A - Miller, B.; Department of Energy Official Listings
Exhibit 7B - Miller, B.; Radio Pulsar Emission from Closed and Filled Magnetospheric Spells; <i>Astrophysical Journal</i> , 464, 359-363 (1996).
Exhibit 8 - The 7th International Conference on Cold Fusion; Rothwell, J.; <i>Infinite Energy</i> , 4, 19, 22-31 (confer especially page 29)
Exhibit 9 - The Office Transfers Secret Applications to China (confer especially page 4)
Exhibit 10 - The Office's Supervisory Department Transfers Missile Technology to China
Exhibit 11 - Report: O'Leary Says Whistle-Blowers Do Face Retrial
Exhibit 12 - Motorola Related

\*\*\*\*\* Updates to Swartz, M.; 1997, *Fusion Technology*,  
 31, 63-74]

Exhibit 9  
 APPEAL FROM THE  
 UNITED STATES PATENT  
 OFFICE

♦ Appeal No: 98-2593

AK6

November 7, 1997

Examiner Daniel Wasil  
Office of Patents and Trademarks  
Washington, D.C. 20231

Dear Mr. Wasil:

Thank you for your assistance. We are very disappointed that the supplied Appendix was removed from the Appeal Brief file following its receipt in the Office. Exhibit A (attached) demonstrates that it was received by the Office. This fact of something being actually delivered to the Office, but then ignored, is similar to the previous "lost" checks (which were actually cashed by the Office). This pattern of capricious actions by the Office again gives the salient appearance of both retaliation, and impropriety, by the Office. In my opinion, the Office has not only been disrespectful to me, but dishonest as well.

As required, Exhibit B shows that the check required for the Appeal Brief was previously delivered (confer also Exhibit A, also demonstrating previous receipt of said check by the Office).

As required, enclosed in triplicate are the Appeal Briefs with Appendices now attached to each one to minimize the chance that they might be removed again.

Sincerely,



Exhibit 6  
APPEAL FROM THE  
UNITED STATES PATENT  
OFFICE

♦ Appeal No. 98-2593

A17

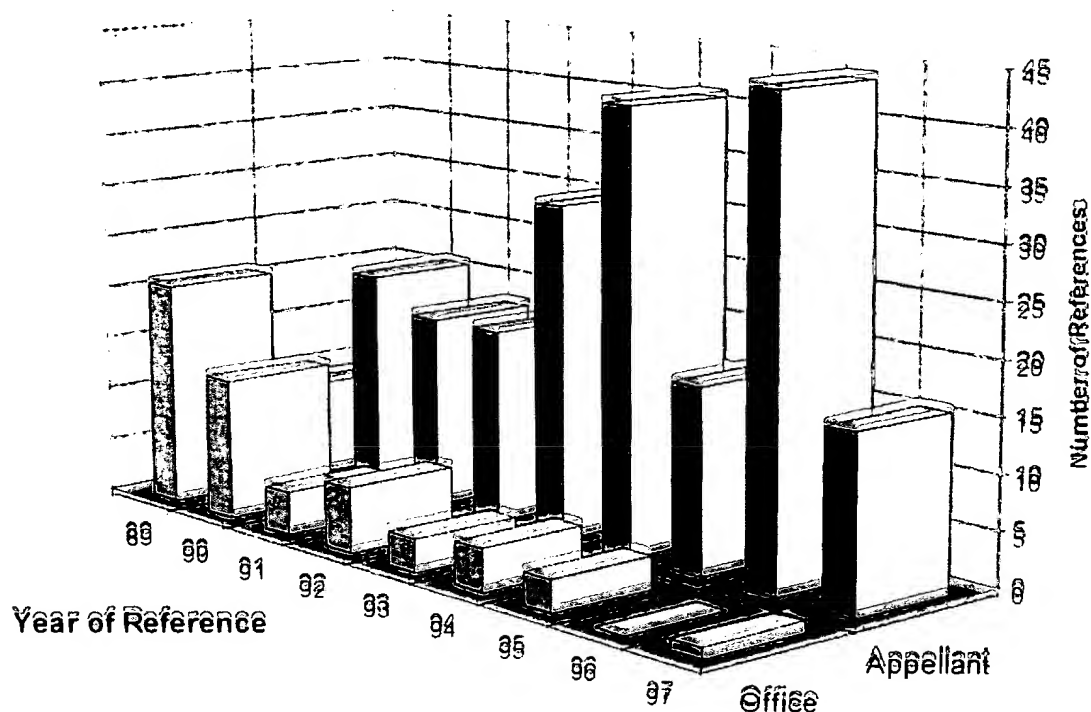
**Table 1 - Tabulated Response of Multiply-Submitted  
Peer-Reviewed Exhibit (\*) to the Patent Office and the Board**  
 [(\*)Swartz. M., 1997, *Fusion Technology*, 31, 63-74]

Missive Number	Date Sent	Form of peer-reviewed article	Where Discussed Therein	Result by PTO	Result by Board	Proof of Receipt
1	3/15/95	Prepublication with original specification and claims	Form 1440 Exhibit 1	"Lost"; as Admitted by Examiner Wasil on 12/96	Ignored	Postcard, Stamp of PTO (not shown)
2	3/12/97	Replacement With Post-Publication Copy Sent to Examiner Wasil (see also Exhibit 6)	In letter, and in Response in Averments 6,7 discussed on pages 50-51, Also Form 1440 Exhibit 2	"Lost"; as admitted by Examiner Wasil in telephone call "typically left in" [4/17/97 at 3 PM]	Ignored	Postcard, Stamp of PTO in Exhibit 3
3	5/26/97	Second Replacement Copy Of Post-Publication Article	In Response on pages 2, 3, Also Form 1440	"Lost"	Ignored	Postcard, Stamp of PTO in Exhibit 4
4	9/16/97	Third, Fourth, Fifth Replacement Copies Of Article send to Board As part of Appendix	Discussed in Appeal Brief including on pages 47, 57	"Lost" with entire Appendix, admitted by the Examiner	Ignored	Postcard, Stamp of PTO in Exhibit 5
5	11/08/97	Sixth, Seventh, Eight Replacement Copies Of Article send to Board As part of Appendix	Discussed in Retyped Appeal Brief including on pages 47, 57	"Lost" with entire Appendix, admitted by the Examiner	Ignored	Postcard, Stamp of PTO in Exhibit 7
6	11/27/97	Ninth, Tenth, Eleventh Replacement Copies Of Article Sent To Board, One In Each Brief -TriPLICATE	As part of Appendix	Ignored by the Board	Ignored	Postcard, Stamp of PTO (not shown)
7	6/25/98	Twelfth, Thirteen, And Fourteenth Replacement Copies Of Article Included with Reply Brief which also contained followup articles, One In Each Reply Brief In TriPLICATE	Discussed in Reply Brief including on pages 1-4 with respect to systematically missing documents.	Ignored by the Board	Ignored	Postcard, Stamp of PTO in Exhibit 8

**APPENDIX "F"**

Several hundred submitted references from the Appellant date from 1989 to 2006. These publications are recent unlike the Office's 17 year old newspapers. Their histogram is shown. Not included are the Appellant's peer-reviewed publications which are even more relevant.

**References by the Office and Appellant by Year since 1989**



**COPY**

## Exhibits Sent To Office By Applicant

[(\*) Appellant has several cases before the Board with substantial literature. As the United States Board of Customs and Patent Appeals stated:

"An original specification can also incorporate by reference subject matter disclosed in another patent application which is pending before the Patent Office and hence unavailable to the public."

[In re JOLLES; United States Board of Customs and Patent Appeals, 1980, 628 F.2d, 1322, 206 USPQ 885]].

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## APPENDIX G



### **Pleadings, Declarations, and Exhibits Submitted**

The Declarations and submitted Exhibits exceed by any test the amount of evidence required for proof of utility. In this case (00-1107), the Documents and pleadings supplied are on the left. Those from case 00-1108 are on the right. The documents include more than three hundred references, more than thirty publications by the Applicant, Declarations and other exhibits, constituting considerable weight (more than 140 pounds for all of the patent applications). These Declarations and exhibits with crystal clarity disprove the Board's notions and are therefore sufficient [In re Gazave, 54 CCPA 1524, 379 F.2d 973, 154 USPQ 92 (1967); In re Chilowsky, 43 CCPA 775, 229 F.2d 457, 108 USPQ 321 (1956); In re Jolles, U.S.C.P.A., 1980, 628 F.2d 1322, 206 USPQ 885].

NOTA BENE: In '937, the Office's "docket" is inaccurate in several ways. Forty-three (43) pleadings, Declarations, and letters sent by the Appellant were not recorded, and Declarations have been incorrectly listed as "letters". It also ignores that six (6) pleadings of, or communications by, the Office were not sent to the Appellant. No explanation is given for the eighteen (18) Office's entries out-of-order temporally, indicating that the purported "Docket" was not made contemporaneously [Appendix A1-A7 (corrected A8-A11, proof A12-A17)] and in defiance of the Office's date stamps (A12) and in violation of 18 U.S.C. 2071. These events have prejudiced the Appellant.

In '970, the Office's "docket" is inaccurate in several ways. Thirty seven (37) of Appellant's pleadings and Declarations were not recorded. The Board has confirmed this in a remand (A82). As many as six (6) pleadings of, or communications by, the Office were not sent to the Appellant. The analysis reveals that, curiously, seven (7) of the Office's entries are out of order, indicating that the purported "Docket" was not made contemporaneously. These events have prejudiced the Petitioner.

**Table 1 - Tabulated Response of Multiply-Submitted  
Peer-Reviewed Exhibit (\*) to the Patent Office and the Board**

[(\*)Swartz. M., 1997, *Fusion Technology*, 31, 63-74]

<b>Missive Number</b>	<b>Date Sent</b>	<b>Form of peer-reviewed article</b>	<b>Where Discussed Therein</b>	<b>Result by PTO</b>	<b>Result by Board</b>	<b>Proof of Receipt</b>
1	3/15/95	prepublication with original specification and claims	Form 1440 Exhibit 1	"lost", as admitted by Examiner Wasil on 12/96	ignored	Postcard, Stamp of PTO (not shown)
2	3/12/97	replacement with post-publication copy Sent to Examiner Wasil (see also Exhibit 6)	In letter, and in Response in Averments 6,7 discussed on pages 50-51, Also Form 1440 Exhibit 2	"lost", as admitted by Examiner Wasil in telephone call "typically left in" [4/17/97 at 3 PM]	ignored	Postcard, Stamp of PTO in Exhibit 3
3	5/26/97	Second Replacement copy of post-publication article	In Response on pages 2, 3, Also Form 1440	"Lost"	ignored	Postcard, Stamp of PTO in Exhibit 4
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5	11/08/07	Sixth, Seventh, Eight Replacement copies of article send to Board As part of Appendix	Discussed in Retyped Appeal Brief including on pages 47, 57	"lost" with entire Appendix, admitted by the Examiner	ignored	Postcard, Stamp of PTO in Exhibit 7
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- 6) Exhibit "E" - Peer reviewed Paper Swartz-Forsley
- 7) Copies of Declarations of Prof. Hagekstein, Robt Bass,  
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Serial No.: 12316643 Filed 12/15/2008

(Thank you) Dr. M. Swartz Mailed December 7, 2010



**EXHIBIT "B"**



# QUASI-ONE-DIMENSIONAL MODEL OF ELECTROCHEMICAL LOADING OF ISOTOPIC FUEL INTO A METAL

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COLD FUSION

TECHNICAL NOTE

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*A quasi-one-dimensional model examines the electrochemical loading of isotopic fuel into a metal cathode. Both the competitive evolution of gas at that cathode and the ratio of the electric energy to thermal energy may control the spatial distribution and loading rate.*

## INTRODUCTION

In March 1989, electrochemically induced nuclear fusion reactions were reported<sup>1,2</sup> but were initially very difficult to reproduce. By 1992, several experiments had demonstrated that anomalous nuclear and enthalpic processes occur in palladium that has been highly loaded with deuterium.<sup>3-5</sup>

This technical note discusses the electrochemical loading of a palladium cathode with an isotopic fuel (deuterium). A quasi-one-dimensional model was developed that suggests that both competitive gas-evolving reactions at the metal surface and the ratio of the applied electric field energy to thermal energy ( $k_B \times T$ ) appear to be decisive in controlling the loading of the metal by the isotopic fuel.

## QUASI-ONE-DIMENSIONAL MODEL

Classically, an electrode in a heavy water solution at equilibrium should measure potentials associated with the Nernst equation. However, during the loading of isotopic fuel or during the fusion reaction, the system may not be at equilibrium. Furthermore, such derived solutions may be less informative regarding the rates of such loading or fusion reactions. Therefore, a quasi-one-dimensional model has been developed in an attempt to describe the flux of deuterons toward and into the cathode.

The application of an electric power source generates an applied electric field intensity. The problem of a mathematical solution includes the fact that the electric field is itself altered as the solution and system each respond with complex conduction and polarization phenomena.<sup>6</sup> The salient result, among other things, includes cation flux toward the cathode.

There also results in the pericathodic solution a buildup of both deuterons and other cations, as well as the development of a low dielectric constant (gas bubble) layer. Ionic drift, secondary space-charge polarization, propagation of solvated deuterons, deuterons in clathrates, and intra- and intermolecular deuteron transfer in the heavy water,<sup>7</sup> and the formation of low dielectric constant (compared with water) bubbles abutting the cathode are the minimum expected.<sup>8,9</sup>

Figure 1 shows the direction of the applied electric field and its effect on the spatial distribution of deuterons in the aqueous solution and cathode. Figure 1 shows the four regions of the electrochemical cold fusion cell. The first region

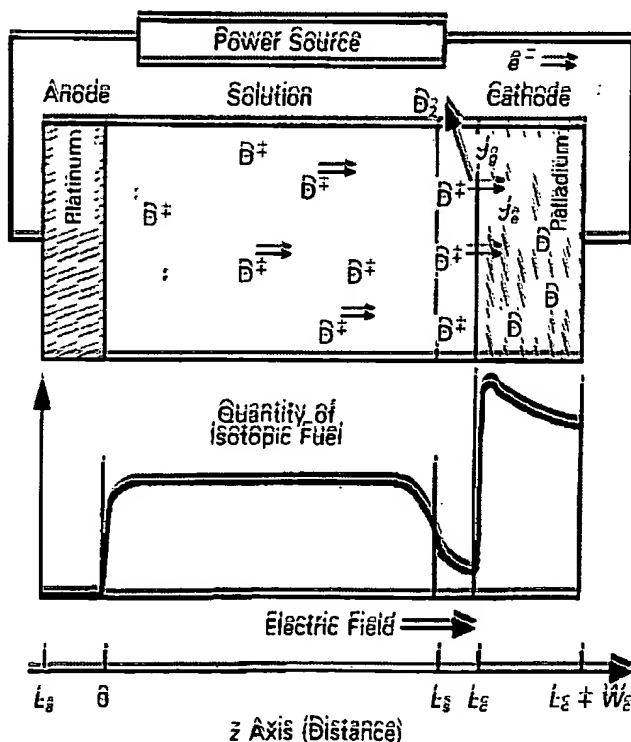


Fig. 1: Four-region cathode model.

is the platinum anode in which few deuterons reside. The second region is the solution, which is modeled as extending between  $0 \leq z \leq L_c$ . The third region is a double layer, whose width  $L_c = L_d$  is greatly exaggerated in the figure. The last region is the palladium cathode, beginning at  $L_c$  and of width  $W_c$ .  $L_c = L_d$  is so small that for most calculations,  $z = L_c + L_d$  is simply taken as  $z = L_c$ .

Within the solution, the deuterons are distributed mainly tightly bound to oxygen atoms as heavy water. The drift induced by the applied electric field is shown schematically in Fig. 1; it does not mean that the deuterons actually are free to travel in such a simple fashion.

In this model, a double layer is present between the solution and the metal. The double layer is, in part, created by the cathode fall of ions and other polarization reactions of the solution and the solutes therein to the applied electric field. This boundary between the palladium cathode and the heavy water solution also may influence the loading rate of the metal by the isotopic fuel.

As Fig. 1 shows, at least three other deuteron fluxes must be considered. The model presented links the deuteron flux from the solution into the pericathodic volume, and then finally either into the metal or toward gas evolution. Not shown in Fig. 1 but considered in the model is the flux of deuterons lost in any and all putative fusion reactions (represented as  $J_f$ ).

#### DEVELOPMENT OF THE QUALITATIVE MODEL

In the absence of solution convection, a quasi-one-dimensional model can be developed by considering that the flux  $J$  of any species (here the deuterons) results from both diffusion down concentration gradients and electrophoretic drift.<sup>9</sup> For simplicity, solution convection and the impact of other conduction/polarization components are ignored for this analysis. Note that (see Nomenclature on p. 366)

$$J_D(z, t) = -B \times \frac{d[D^+(z, t)]}{dz} = \mu \times [D^+(z, t)] \times \frac{d\Phi}{dz} \quad (1)$$

where

$B$  = diffusivity of deuterons in each respective region considered ( $\text{cm}^2/\text{s}$ )

$\mu$  = electrophoretic mobility ( $\text{cm}^2/\text{V} \cdot \text{s}$ ).

For this model, both material inhomogeneities and the anisotropy of the lumped parameters are ignored. Within the palladium, for example, there are great differences in  $B$  throughout the metal, especially between the lattice and grain boundaries.

Three additional components of deuteron flux must be considered. The first is the entry of deuterons into the bulk of palladium that constitutes the cathode. That flux is described as  $J_c$ , the rate at which deuterons physically enter the palladium cathode. The second deuteron flux is that component lost at the cathode to gas evolution and is described here as  $J_g$ . These deuteron flux terms are assumed to be present only at  $z = L_c$ . The term  $J_f$  is the flux of deuterons lost to fusion, which is assumed to be zero in the solution.

Adding the additional deuteron fluxes yields

$$J_D(z, t) = -B \times \frac{d[D^+(z, t)]}{dz} = \mu \times [D^+(z, t)] \times \frac{d\Phi}{dz} = \sum J_i(z, t); \quad (2)$$

where  $\sum J_i$  is the sum of all deuteron fluxes at the cathodic surface and in the bulk metal and

$$\begin{aligned} \sum J_i(z, t) &= (J_c + J_g) \times u_0(z = L_c, t) \\ &+ J_f \times \{u_{-1}(z = L_c, t) \\ &= u_{-1}[z = (L_c = W_c, t)]\}; \quad (3) \end{aligned}$$

where

$u_0$  = impulse function, located spatially at  $z = L_c$

$u_{-1}$  = step function; the superposition of two such step functions represents that the fusion flux may actually occur within the bulk of the metal.

Solution for the time rate of change in any given volume is thus determined by these fluxes. Gauss' theorem simplifies this to

$$\begin{aligned} \frac{d[D^+(z, t)]}{dt} &= \left[ B \times \frac{d^2(D^+)}{dz^2} \right] + \left[ \mu \times (D^+) \times \frac{d^2\Phi}{dz^2} \right] \\ &+ \left[ \mu \times \frac{d\Phi}{dz} \times \frac{d(D^+)}{dz} \right] + \left[ \frac{d(D^+)}{dz} \times \frac{dB}{dz} \right] \\ &+ \left[ (D^+) \times \frac{d\Phi}{dz} \times \frac{d\mu}{dz} \right] = \frac{d \sum J_i}{dz} \quad (4) \end{aligned}$$

For simplicity and to solve, a number of approximations can be made as follows:

1. The applied electric field intensity imposes a negligible energy (in relation to thermal energy at any molecular site of interest in the bulk solution (where the ratio of electrical to thermal energies is  $10^{-4}$  to  $10^{-6}$ )). Therefore, no free charge density in the solution is expected. Thus, the Laplacian of the electric potential (and thus the second term on the right side of Eq. (4)) is zero. This assumption may not be correct either in the vicinity of irregularities (such as spikes) on the cathode or in the double layer (see below).

2. All of the fusion reactions are assumed to occur only at  $z \geq L_c$  (i.e., no fusion occurs in the bulk solution).

3. Deuterium is neutral in charge and has insignificant electrophoretic mobility in comparison with that for  $D^+$ . Deuterons also may migrate by dielectrophoretic forces<sup>6</sup> by way of  $D_2$  and by way of both intra- and intermolecular deuteron transfer, but such effects are ignored in this simple model.

4. It is assumed that no recombination of any generated  $D_2$  gas occurs to form heavy water. Thus, for simplicity,  $J_r$  (for recombination) is ignored.

5. Deuteron penetration is modeled to occur only at the cathode-double-layer boundary (at  $L_c$ ), and such flux ( $J_c + J_g$ ) is assumed to be electron limited, with an efficiency (electrical transference) of  $\eta$ .

6. There is conservation of deuterons, with the exception of a small loss  $K_f$  to any fusion reactions. The value of  $K_f$  is extremely small compared with all other loading rates and/or gas-evolving reactions.

7. Neither solution convection, nor possible dielectrophoretic or other stabilization of that convection, is considered in this simple model.

8. Thermal effects are also ignored, but these could be especially significant across the double layer, especially in the

## Swartz QUASI-ONE-DIMENSIONAL MODEL

vicinity of irregularities such as spikes or near either temperature or material inhomogeneities.

Notwithstanding the foregoing, the steady-state general solutions are obtained by substituting

$$D^+(z) \equiv \sum D_i \exp(\gamma \times z); \quad (5)$$

where  $\gamma$  can be complex.

By substitution, collection of terms, and the use of the binomial expansion, the homogeneous solution of Eq. (3) becomes, in the heavy water solution, of the form  $\gamma = \mu E/B$ . The particular solution of the differential equation is "driven" by the sum of the deuteron fluxes toward fusion, into gas, and into the metal cathode, where  $\sum J_i = J_f + J_g + J_e$ .

A simple solution can be developed with further approximations and linearizations:

9. It is assumed that there is no spatial gradient to the diffusion coefficient of deuterons  $B$  and/or their electrophoretic mobility  $\mu$ . This is not true within the palladium cathode and is probably not true across the double layer. However, this approximation does permit a more simplified expression:

10. The generation of  $D_2$  gas, the fusion loss of deuterons by the putative fusion reactions, and the loading of palladium are modeled to occur as first-order reaction rates proportional to the local concentration of deuterons. This is probably not true for gas evolution because it involves the formation of diatomic deuterium, and possibly not true for some of the putative fusion reactions.

11. Terms  $K_g$  and  $K_e$  are assumed to be zero away from the surface of the cathode in the solution. The only contribution to the spatial derivative of the first-order deuteron flux rates is thus proportional to the absolute value of  $K_f$ ,  $K_g$ , and  $K_e$  at that cathodic location. Note that

condition of mass conservation of all deuterons at some time  $T$  requires

$$\int_0^{L_c + W_c} A \times [D^+(z, t)] dz = \int_{-L_g}^{L_c + W_c} A \times [D^+(z, 0)] dz \\ = \int_0^T A \times \sum J_i(\tau) d\tau; \quad (8)$$

It is obvious that  $D^+(t = 0)$  may not be uniform and that  $J_f$ ,  $J_e$ , and  $J_g$  may not be time invariant. Furthermore,  $J_f$  and the possible addition of more deuterons to the system are also both ignored in this qualitative model.

The molecular flux at each electrode must be considered so that just at the palladium cathode  $z \equiv L_c$ :

$$J_D(L_c, t) \equiv J_e + J_g; \quad (9)$$

Deuteron entry to the cathode is assumed to be electron limited (with all entry occurring only at the cathode-double-layer interface), and so

$$\sum J_i(L_c, t) \equiv J_e + J_g = \frac{n \times I}{A \times F}; \quad (10)$$

Finally, it can be assumed that there is a negligible number of deuterons at the anode. This is reasonable because of the unstable nature of cationic deuterons at that location, where the anode is the site of oxidation. The applied electric field intensity would sweep the palladium cations away from the anode toward that cathode. The assumption is also reasonable because of the low solubility of deuterons for platinum. Note that

$$[D^+(0, t)] \equiv 0; \quad (11)$$

The steady-state expression for the initial coefficient of the final spatial distribution at the pericathodic interface is proportional to

$$\langle D_i \rangle \times \left( \frac{qE}{2k_B T} = \frac{\sum K_i}{2B} \right) \times L_c \\ \left\{ \exp \left[ \left( \frac{qE}{2k_B T} = \frac{\sum K_i}{2B} \right) \times L_c \right] + \left( \frac{qE}{2k_B T} = \frac{\sum K_i}{2B} \right) \times (L_c) = 1 \right\}; \quad (12)$$

$$J_f \equiv K_f \times (D^+); \quad (6a)$$

$$J_g \equiv K_g \times (D^+); \quad (6b)$$

and

$$J_e \equiv K_e \times (D^+); \quad (6c)$$

For  $0 \leq z \leq L_c$ , the general solutions are thus

$$\gamma = 0, \left( \frac{qE}{2k_B T} \right) = \left( \frac{\sum K_i}{2B} \right) \\ \pm \left\{ \left( \frac{qE}{2k_B T} = \frac{\sum K_i}{2B} \right)^2 \right. \\ \left. = \left[ \left( \frac{1}{B} \right) \times \left( \frac{d \sum K_i}{dz} \right) \right]^{1/2} \right\}; \quad (7)$$

## BOUNDARY CONDITIONS

The actual coefficients of Eq. (5) are determined both by the boundary conditions and by conservation of mass. The

L'Hospital's rule may be used to determine the initial coefficient in the limit as either  $K_e$ ,  $K_g$ , or  $K_f$  approaches infinity. That limit is 1.

## POSSIBILITY OF A CRITICAL LOADING FLUX

Examination of Eq. (7) reveals that there may be a critical loading rate that occurs when the terms in the parentheses in Eqs. (7) and (12) go to zero. That occurs at  $L \equiv L_c$  when

$$K_e = (\mu \times E) = (K_g + K_f); \quad (13)$$

One implication is that the evolution of  $D_2$  gas and loading of the palladium cathode are mutually exclusive. Another is that the critical loading rate appears to be related to the difference between the deuteron availability (secondarily produced by the applied electric field) and the loss of deuterons by gas evolution, loading of the metal, and the fusion reactions.

In fact, the ratio can be examined for its relation to thermal processes by substituting the Einstein relation:

$$\frac{B}{\mu} \equiv \frac{k_B T}{q}; \quad (14)$$

At the beginning of an experiment involving the electrochemical loading of deuterium into palladium,  $J_f$  is zero because the palladium is not loaded. Therefore, the loading flux of deuterons into the palladium cathode is

$$J_e = \left( \frac{2B \times L_c \times \lambda}{\lambda + 1} \right) \times \langle D_i \rangle \times \left( \frac{1}{1 - \exp\left(\frac{-qE \times L_c}{k_B T}\right)} \right) \times \left( \frac{qE}{k_B T} \right)^2, \quad (15)$$

where

$\langle D_i \rangle$  = initial concentration of deuterons in the solution  
 $\lambda$  = relative loading rate, the ratio of the fluxes, loading flux  $J_e$  to the gas evolution flux  $J_g$ .

Note that

$$\lambda = \frac{J_e}{J_g} \quad (16)$$

Thus, if  $\lambda$  is 0.01, most of the current goes to gas electrolysis; whereas  $\lambda = 100$  would indicate a most efficient loading rate.

The substitution of Eq. (14) into Eq. (13) reveals that the loading is determined by two terms. The first term is controlled by the ratio of the organizing of the deuterons (by the applied electric field) to the random thermal disorganization. The second term is the mutually exclusive loss of deuterons at the cathode through gas evolution, represented by  $J_g$  [Eq. (13)] or by the loading factor in Eq. (16).

Figure 2 shows this relationship by plotting the relative loading of isotopic fuel into a metal based on the qualitative quasi-one-dimensional model described here. The loading flux of deuterons into the palladium at the cathode surface  $J_e$  is shown as a function of the electric field intensity parametrically for various rates of gas ( $D_2$ ) evolution rates at the cathode (and resulting from  $J_g$ ). The series of curves indicates that the loading rates may be critically dependent on the electric field energy as well as the competing gas-evolving reactions.

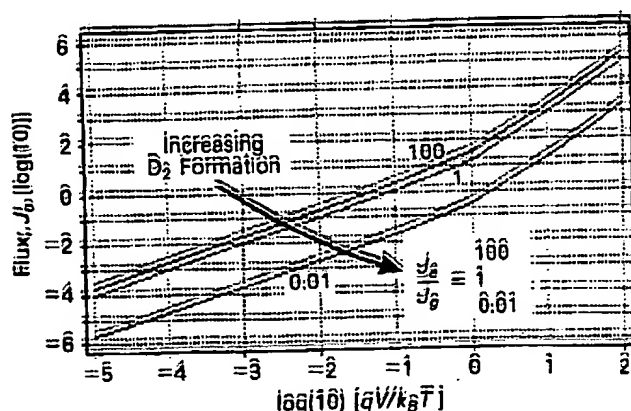


Fig. 2. Loading rate of palladium.

## WITHIN THE CATHODE

Intermolecular deuteron transfer from the solution to sites within the palladium may dominate the rate of loading. Within the metal and across the double layer, the diffusion has been considered by several models. Defects, grain-boundary dislocations, and fissures may greatly influence the deep loading of the metal; and "zeolite"-like diffusion has been described.<sup>10</sup>

## POSSIBLE IMPLICATIONS REGARDING SPIKES ON THE CATHODE

A corollary is obtained by inverting the equation, which indicates that the electric field must be greater than

$$E > \frac{\sum J_i}{\mu \times \langle D_i \rangle \times \left[ 2 + \left( \frac{\sum J_i \times L_c}{2B \times \langle D_i \rangle} \right) \right]} \quad (17)$$

One interpretation is that spikes and irregularities on the cathode may be crucial to obtain adequate filling of the cathode. This effect may occur by way of the large electric fields that occur at such sharp points on a metallic surface such as the palladium cathode.

## STEADY-STATE FUSION RATES

When the filling of the palladium with deuterium is complete, a "steady state" (to the degree such might exist) of fusion might be expected. At that time because the electrode is already fully loaded, then  $J_e$  would be expected to be small and  $J_g$  to be relatively more significant.  $J_g$  would be on the order of  $J_f$ , and so at that time,

$$J_f = \frac{B \times L_c \times \langle D_i \rangle}{1 - \exp\left(\frac{-qE \times L_c}{k_B T}\right)} \times \left( \frac{qE}{k_B T} \right)^2 = \frac{J_g}{2} \quad (18a)$$

or

$$J_f = \left( \frac{2\lambda}{2\lambda + 1} \right) \times \left( \frac{B \times \langle D_i \rangle}{L_c} \right) \times \left[ \frac{1}{1 - \exp\left(\frac{-qV}{k_B T}\right)} \right] \times \left( \frac{qV}{k_B T} \right)^2 \quad (18b)$$

Equation (18a) uses the two deuteron fluxes at the cathode to define the approximate fusion flux. Equation (18b) substitutes the transsolution voltage, and thereby assumes a simple distribution, neglects contact potentials and overvoltages, and uses the simplification of  $\lambda$  as the relative loading rate factor. The Einstein relation is used to put the equation back in terms of the original parameters.

## POSSIBLE IMPLICATIONS FOR CODEPOSITION AND OTHER THEORIES

Because palladium cations in solution can be modeled similarly to deuterons (with the exception of intra- and intermolecular deuteron transfer and their different roles in clathrates), such palladium nuclei will also drift toward the cathode in an applied electric field. For palladium, there is

## Swartz QUASI-ONE-DIMENSIONAL MODEL

obviously no  $K_2$  or  $K_f$  term, but  $K_e$  does exist, and the palladium cations can electrodeposit on the cathode. The model was examined to consider this further. Coupled equations, considering both charge carriers, were used to determine the final distribution of deuteron species in the bulk solution. An equation similar to Eq. (12) was used to determine the ratio of deuterons to palladium just at  $L_c$ . This is the local loading ratio.

The derivations for the spatial distribution of palladium nuclei undergoing codeposition from the solution indicate that the physical deuterium/palladium ratio near the cathode surface is significant and nonzero shortly after the electric field is applied to the solution.

The model indicates that the distribution of codeposited palladium and deuterons onto the cathode should theoretically yield excess energy more quickly than simple electrodeposition of deuterons onto palladium. This advantage accrues because a local high fractional saturation of the deposited phase occurs at  $L_c$ . This analysis indicates that the active medium would be very close to fully charged as it is created, enabling it to function immediately.

In cold fusion experiments, full loading appears to be a prerequisite, but possibly insufficient requirement, before fusion occurs. Therefore, as compared with simple electrodeposition of deuterium onto a palladium cathode, codeposition may surmount at least one rate-determining step.

Finally, some theories of cold fusion are reported to involve the putative requirement of a pericathodic or intracathodic role for second-row elements during the fusion reactions.<sup>11</sup> This quasi-one-dimensional model could be used to similarly determine both their buildup and loading parameters.

## SUMMARY

A simple qualitative quasi-one-dimensional model is derived to consider the loading of deuterium into palladium. Both competitive gas-evolving reactions at the metal surface and the ratio of the applied electric energy to thermal disordering energy ( $k_B \times T$ ) may be decisive in controlling the loading of the metal by the deuterons obtained from heavy water. There appear to be possible implications for the shape of the cathode and for codeposition methods of loading the cathode.

## NOMENCLATURE

$A$	= area
$B$	= diffusivity of deuterons ( $\text{cm}^2/\text{s}$ )
$(D)_{\text{tot}}$	= total deuteron concentration (used within the metal)
$(D+)$	= deuteron concentration (used within the solution)
$D(t=0)$	= initial deuteron concentration (at time $t=0$ )
$E$	= electric field
$F$	= Faraday
$I$	= electrical current
$J_D$	= flux of deuterons in solution
$J_e$	= flux of deuterons entering into the palladium cathode
$J_f$	= flux of deuterons lost in putative fusion reaction(s)

$J_g$	= flux of deuterons at the cathode evolving to gas
$K_e$	= first-order deuteron entry rate
$K_f$	= first-order deuteron fusion rate
$K_g$	= first-order deuteron gas evolution rate
$k_B$	= Boltzmann constant
$L$	= length
$q$	= electric charge
$T$	= absolute temperature (K)
$V$	= transsample voltage
$z$	= distance variable
<i>Greek</i>	
$\phi$	= potential
$\mu$	= electrophoretic mobility ( $\text{cm}^2/\text{V}\cdot\text{s}$ )
$\eta$	= electrical transference ratio
$\lambda$	= relative loading rate

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# A new look at low-energy nuclear reaction (LENR) research: a response to Shanahan

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In his criticisms of the review article on LENR by Krivit and Marwan, Shanahan has raised a number of issues in the areas of calorimetry, heat after death, elemental transmutation, energetic particle detection using CR 39, and the temporal correlation between heat and helium 4. These issues are addressed by the researchers who conducted the original work discussed in the Krivit and Marwan (K&M) review paper.

## 1. Introduction

In 1989, the subject of “cold fusion”, nowadays known as Low Energy Nuclear Reactions (LENR), was announced with great fanfare, to the chagrin of many people in the scientific community. However, the significant claim of its discoverers, Martin Fleischmann and Stanley Pons, excess heat without harmful neutron emissions or strong gamma radiation, involving electrochemical cells using heavy water and palladium, has held strong.

In recent years, LENR, within the field of condensed matter nuclear science, has begun to attract widespread attention and is regarded as a potential alternative and renewable energy source to confront climate change and energy scarcity. The aim of the research is to collect experimental findings for LENR in order to present reasonable explanations and a conclusive theoretical and practical working model.

The goal of the field is directed toward the fabrication of LENR devices with unique commercial potential demonstrating an alternative energy source that does not produce greenhouse gases, long lived radiation or strong prompt radiation. The idea of LENR has led to endless discussions about the kinetic impossibility of intense nuclear reactions with high coulomb barrier potential. However, recent theoretical work may soon shed light on this mystery.

As a result of the New Energy Technology Symposium at the American Chemical Society in Salt Lake City in 2009, the symposium organizers (K&M), were invited to write a summary of the presentations given at this meeting and overall to introduce and briefly review the topic of Low Energy Nuclear

Reactions. The article titled “A New Look at Low Energy Nuclear Reaction Research” mainly includes and discusses a range of experimental results in light of LENR effects with access to new sources and theoretical explanations.<sup>1</sup> With this writing we intended to give insight into this controversial subject and to help the audience re evaluate their perspective on LENR for a possible alternative energy source and to create appropriate Energy Sustainability Concepts.

In the following we respond to the critiques K. Shanahan has revealed in his rebuttal of our paper.

## 2. Discussion

### 2.1 Calorimetry

Shanahan manufactured beads for LENR calorimetry experiments in conjunction with EarthTech (Austin, Texas) in the mid 90s. Swartz noted in his published analysis of the experiment<sup>2</sup> that EarthTech may have ignored evidence of excess power and a possible Optimum Operating Point (OOPs) manifold.<sup>3</sup> These manifolds also correlate input power, excess output power and the generated *de novo* helium 4.<sup>4</sup> Nearly fifteen years later, Shanahan followed this up with a commentary comprised of unsubstantiated blanket statements critical of the field. He reasons by syllogism from particular examples (often misunderstood) to general conclusions that clearly cannot apply in all of the examples of anomalous heat production observed in a wide variety of experimental configurations involving different kinds of calorimeters, *e.g.* isoperibolic, Seebeck, and mass flow. To explain the excess heat in these experiments, Shanahan invokes what he calls a Calibration Constant Shift (CCS). This CCS is nothing more than a hypothesis and should be stated as such (CCSH). There is no experimental evidence that it occurs, especially at the level of  $\pm 780$  mW stated by Shanahan. Furthermore, Shanahan does not specify mechanisms by which a calorimeter thermal calibration can change in such a way that, just during the periods of putative excess thermal power production, the calibration constant is different from its initial and final calibrated value. He employs the calibration constant shift hypothesis (CCSH), unquantified, with the logic that if this can happen in one experiment or calorimeter type, then it must be presumed to happen in all. To dispel this notion, the excess heat results

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obtained using two completely different types of calorimeters will be discussed.

The excess power measurements done at China Lake used an isoperibolic type calorimeter. Periodic calibrations over a five year period showed no significant changes in the heat transfer coefficients for the China Lake calorimeters.<sup>5</sup> In addition, the isoperibolic calorimeters used by Miles at the New Hydrogen Energy Laboratory (NHE) in Japan incorporated an automated Joule heat pulse. The calorimeter was calibrated at least once every second day. From this, the coefficients of thermal calibration are deduced by backwards integration fitting of the calorimeter response to this known input thermal power pulse. Calibrations were performed before, after and during the production of excess thermal power. The excess power measurements<sup>5</sup> were summarized by the following six conclusions:

- (1) The excess power effect was typically 5 to 10% larger than the input power. The largest excess power effect was 30%
- (2) The excess power in terms of the palladium volume was typically 1 to 5 W/cm<sup>3</sup>
- (3) Long electrolysis times ranging from 6 to 14 days were required before the onset of the excess power for Pd rod cathodes
- (4) Excess power production required a threshold current density of 100 mA/cm<sup>2</sup> or higher
- (5) Overall, only 30% of the experiments produced excess power
- (6) The success ratio in obtaining excess power varied greatly with the source of the palladium

It would be nearly impossible to obtain these conclusions if the excess power was due to Shanahan's random CCSH. Furthermore, SRI obtained very similar conclusions using a totally different type of calorimeter over this same time period.<sup>4,5</sup> The SRI calorimeter was based upon mass flow in which the thermal efficiency reflects the fraction of the total heat removed by convective flow, *i.e.*,

$$\Phi = Q_{\text{Convection}} / [Q_{\text{Convection}} + Q_{\text{Conduction}} + Q_{\text{Radiation}}] \quad (1)$$

A Mass Flow Calorimeter designed with high thermal efficiency,  $\Phi$ , can operate as a first principles device with no calorimeter specific calibrations. Nevertheless, the calorimeter was periodically calibrated using an internal resistor. The maximum error was determined to be  $\pm 50$  mW. For a mass flow calorimeter with  $\Phi = 99\%$ , only 1% of the measured heat output is subject to the vagaries of geometric effects on conduction and radiation. The remaining 99% is determined solely from temperature, mass flow rate and the heat capacity of the convecting fluid. None of these measurements are subject to calibration drift and can be measured and calibrated independent of the calorimeter. Thus the CCSH can account for an excess power of at most (and actually much less than) 1% of the output power in the example given. Reported excess power numbers are typically  $>10\%$  of the input electrical power. The CCSH can thus be shown quantitatively to fail in all cases of excess power reported in mass flow calorimeters. The SRI results typically yielded 5 to 10% excess power with a maximum of 28% excess power; the excess power was 1.5 W/cm<sup>3</sup> on the average; the initiation time was on the order of 300 h for 1.4 mm Pd rods; the threshold current density ranged from 100–400 mA/cm<sup>2</sup>; and the success rate varied greatly with the source of the palladium.<sup>6,7</sup> Two laboratories working

completely independently using different types of calorimeters (isoperibolic vs. flow) could not arrive at these similar conclusions if the excess power was due to random calibration constants shifts.

Like Miles of China Lake, the SRI group showed that the rate of heat production is dependent on applied current. However, the SRI group also discovered that heat production correlates with the average D/Pd ratio of the cathode. A similar correlation between these variables and energy production has been observed in every subsequent study done world wide when such measurements are made. This consistency in the behavior of two independent variables shows that in many cases the anomalous energy is not the result of error in measurement. Additional excess heat production replications are summarized in books by Beaudette<sup>8</sup> and Storms.<sup>9</sup>

Since the CCSH has no reason for bias in sign it may equally increase or decrease the measured output and thus excess power. In no case that we are aware of have significant "negative excess" powers been observed in calorimetry experiments except in transient departures from the steady state. Unless a reason is given for asymmetry in the hypothesized mechanism (or any mechanism given and quantified at all), then the CCSH logically fails.

Finally, this isn't the first time Shanahan has raised these spurious arguments. He's applied them twice before, in 2002<sup>10</sup> and 2005,<sup>11</sup> prompting a published response from Storms in 2005.<sup>12</sup> In his response to Shanahan's criticisms, Storms notes, "The assumptions used by Shanahan to explain anomalous heat claimed to result from cold fusion are shown to be inconsistent with experimental observation." Shanahan's assertions are no more true now than they were five and eight years ago.

## 2.2 Heat after Death (HAD)

The poorly chosen term 'Death' referred to the termination of input electrical power in Pons' cell, which by definition occurs in the HAD region. In the original "HAD" reported by Pons and Fleischman, the electrolysis cell had finally run out of heavy water (due to the electrolysis) thereby unintentionally and inadvertently creating the region of no further input electrical power, because the electrical circuit was 'open circuited'.

Shanahan first mis characterizes this as a phenomenon of a thermodynamically open cell in which "*the electrolysis cell is allowed to lose enough electrolyte via evaporation, entrainment, and electrolysis that electrical contact is broken and current flow stops.*" The phenomenon is more generally the observation of continued heat generation after the cessation of electrochemical current generation by any means (normally, disconnecting the power supply). While not common, this phenomenon is sufficiently well observed, clear and distinctive to have evoked comment by several researchers.

Shanahan seeks to account for a putative mis measurement of heat in a single 1993 example of HAD cited in the K&M review. This he does in terms of his *ad hoc* Calibration Constant Shift hypothesis (CCSH) and/or as the result of the catalyzed burning of (previously) absorbed deuterium, neither of which does he trouble to quantify, leaving the impression that this is "common sense" although not common or sensible enough for the experimenters who actually observed it, to be aware of it. He then

argues from this (mis)analysis of one example of HAD to a general claim that all must be false.

In the 1993 example addressed by K&M and Shanahan, the anomaly observed and reported by Fleischmann and Pons was simply (but remarkably) that the temperature sensed close to an exposed cathode stayed high for a period longer than was previously experienced or anticipated. The significant point of this experiment (unmentioned by Shanahan) was that the electrolyte had evaporated by boiling with input electrical power far less than was needed to do so by simple Joule heating. If Shanahan had troubled to calculate the energy needed to evaporate a significant fraction of the cell electrolyte volume before the cathode was exposed, or added to it the energy required to maintain the cathode at elevated temperature after exposure he would have found that, even though the former is much greater than the latter, both exceed by large factors the heat of formation of  $D_2O$  from cathode absorbed deuterium.

Miles had an experiment that produced the "heat after death" (HAD) effect when he was at the New Hydrogen Energy (NHE) laboratory in Japan. This experiment used a Pd B rod cathode prepared by M.A. Imam of the U.S. Naval Research Laboratory (NRL), and complete details of this experiment are available.<sup>13</sup> An excess power greater than 9 W was observed prior to the cell being driven to dryness (see Ref. 13, Fig. A.22). Furious boiling and swirling actions were observed that were centered around the Pd B cathode indicating that the cathode was the hottest point in the cell. During this boiling phase, most of the gas in the cell would be  $D_2O$  vapor rather than hydrogen and oxygen as stated by Shanahan. Furthermore, the gases exiting the cell were conducted through about two meters of glass tubing to a balance in order to continuously measure the amount of  $D_2O$  that had boiled away. The excess power continued at about the same level after the cell boiled dry and then gradually decayed over several hours. Shanahan's argument for explaining this 'HAD' fails because there would be very little oxygen in a cell filled with  $D_2O$  vapor. If this HAD effect depended upon oxygen, it would initially be small when the cell first boiled dry and then increase as air is gradually drawn back into the cell through the two meters of glass tubing. This was not observed,<sup>7</sup> thus Shanahan's hypothesis for the HAD effect is invalid.

### 2.3 Transmutation

With regards to transmutation, Shanahan impugns the work done by both Mizuno *et al.* and Iwamura *et al.* Figure 9 in the K&M review<sup>1</sup> shows Energy Dispersive X Ray spectroscopy (EDX) analysis done, by Mizuno *et al.*, on a Pd rod before and after it produced excess heat during electrolysis. In his critique, Shanahan suggests that the observed new elements on the Pd rod are the result of contamination. Shanahan contends that metals from the cell components leach into the solution and are transported onto the cathode. What Shanahan does not indicate is that Mizuno *et al.*<sup>14,15</sup> used very pure and carefully analyzed materials in their experiments. During the course of the experiments, electrolysis was done at 150 °C under pressure in an electrolyte containing  $D_2O + LiOH$  after it had been pre purified for seven days by electrolysis using sacrificial platinum electrodes. Furthermore, the stainless steel cell was sealed and protected by a thick coating of Teflon. In these experiments,

electrolysis was continued for 32 days. Upon completion of the experiment, the palladium cathode was analyzed using EDX, AES (Auger electron spectroscopy), SIMS (secondary ion mass spectrometry) and EPMA (electron probe microanalyser). The Figure 9 in the K&M review only shows the EDX results. The other analytical methods confirmed this analysis and found other elements such as As, Ga, Sb, Te, I, Hf, Re, Ir, Br and Xe, several of which had abnormal isotopic ratios. While Shanahan might argue that the chromium (Cr) and iron (Fe) came from exposed stainless steel, this cannot explain the copper (Cu) and titanium (Ti), which were not found initially in the materials, and which showed abnormal isotopic ratios. Nor can it explain the anomalous isotopic distribution observed for Cr.<sup>14</sup>

Iwamura and his co workers conducted gas permeation experiments.<sup>16</sup> These experiments used sandwich structures consisting of alternating thin layers of CaO and Pd. On one side of the sandwich, Iwamura *et al.* deposited a thin elemental layer. This elemental layer is referred to as the 'source element' in the K&M review.<sup>1</sup> The sample was then mounted in a vacuum chamber, with the elemental layer facing the upstream side of the diffusion barrier. The sample was heated to 70 °C and  $D_2$  allowed to diffuse through the structure. During the course of the experiment, the elemental composition of the 'source element' layer was monitored *in situ* and in real time using X ray photo electron spectroscopy (XPS). As the  $D_2$  passed through the sandwich structure, the elemental composition of the thin 'source element' layer was observed to change as a function of time. As the concentration of the source element decreased, the amount of product element increased.

Shanahan states these transmutation results were due to contamination. However, either Pr or Mo was only observed when Cs or Sr, respectively, was deposited on the Pd/CaO multilayer prior to permeation. Neither was otherwise observed. Furthermore, if Mo came from vacuum chamber contamination, then it should be observed with bare Pd instead of only with a Pd/CaO multilayer, but it wasn't. This effect did not occur when CaO was replaced by  $MgO$ , or when  $H_2$  was used even though the other conditions remained unchanged. Hence, the deuterium permeation of a Cs or Sr layer in the Pd/CaO multilayer was necessary for elemental transmutation.

Shanahan also referenced NRL's assertion that the inner wall of Iwamura's balance, and nowhere else in his laboratory, was contaminated with Pr. Iwamura used the balance twice for each sample for 10 s each time. If Pr from the inner wall of the balance contaminated the Pd sample, the lower part of the Pd multilayer sample should also have been contaminated: it wasn't. Praseodymium should have consistently contaminated both control samples and multilayer samples, but it didn't.

The ion implanted Cs concentration continuously decreased from the surface. There was no Pr in the sample prior to permeation, but after deuterium permeation, the Cs concentration decreased in inverse proportion to the increased Pr concentration found in the top 10 nm of the surface. Prior to permeation, the Cs depth profiles in both samples were nearly equivalent, and thus, Cs atoms didn't diffuse. It is unlikely a Pr contamination impurity migrated as Pr was only found within 10 nm of the surface. Consequently, neither NRL's contaminated balance hypothesis nor Shanahan's suppositions account for the observations of elemental transmutation.



## 2.4 Energetic particle detection using CR-39

In their review, K&M<sup>1</sup> discuss the results of an SRI replication of a Pd/D co deposition experiment done using CR 39, a solid state nuclear track detector. In his critique, Shanahan implies that little or no control experiments had been done to test conventional origins for the tracks observed in the CR 39 detectors used in the experiments. He further suggests that the tracks that have been observed in the CR 39 detectors are due to either O<sub>2</sub> attack or 'shockwaves' resulting from explosions due to D<sub>2</sub>/O<sub>2</sub> recombination on the Pd surface. He also states that the triple track shown in the review article is actually overlapping tracks.

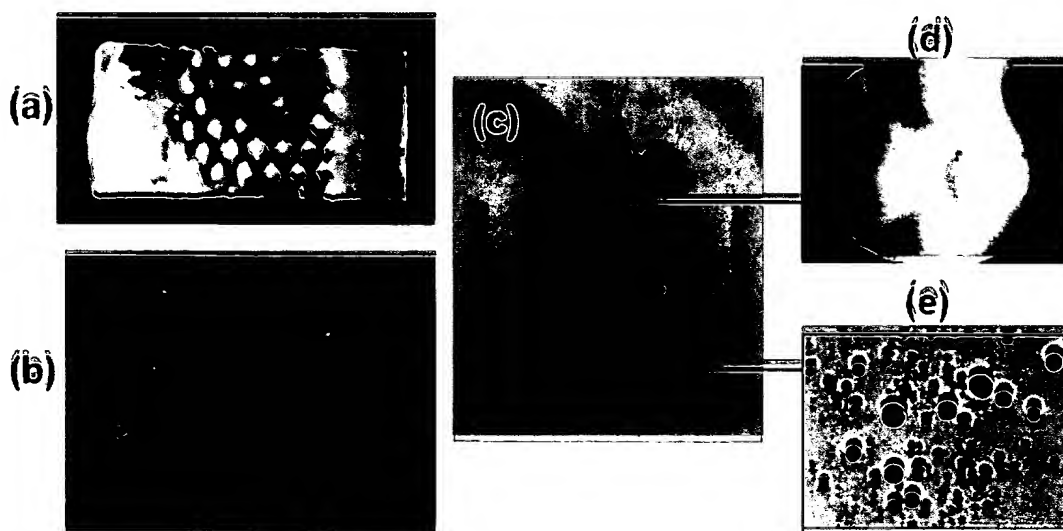
In actuality, SPAWAR had done an exhaustive series of control experiments that showed that the tracks were not due to radioactive contamination of the cell components nor were they due to mechanical or chemical damage.<sup>17,18</sup> The time duration of these control experiments were the same as that used in the Pd/D co deposition experiments. Also, the experimental results summarized in Fig. 1 rule out both O<sub>2</sub> attack and shockwaves as the source of the tracks. It was reported that when Pd/D co deposition was done on Ni screen, in the absence of an external electric/magnetic field, no tracks were observed on the CR 39 detector.<sup>17</sup> Instead the impression of the Ni screen was observed, Fig. 1a. The observed damage is consistent with X ray/gamma ray damage. When Pd/D co deposition was done on Ni screen in the presence of an external electric/magnetic field, tracks were observed, as shown in Fig. 1b. A high track density is observed inside the eyelets of the Ni screen where the Pd plated out. In contrast, tracks in CR 39 were observed in Pd/D co deposition experiments done on Ag, Au, and Pt wires in both the presence and absence of an external electric/magnetic field.<sup>17</sup> The effect of cathode material on the generation of energetic particle tracks in CR 39 is still not understood. Recently, Pd/D co deposition

experiments were done on a composite electrode, Fig. 1c, in the absence of an external electric/magnetic field. The composite electrode was a Ni screen. As shown in Fig. 1c, half the Ni screen is bare. Metallic Au has been plated on the other half. At the end of the experiment, the detector was etched and analyzed. The results show that no tracks were obtained on the bare half of the cathode, Fig. 1d. The impression of the Ni screen is observed. However, tracks were obtained on the Au coated Ni screen, Fig. 1e. Both halves of the cathode experienced the same chemical and electrochemical environment at the same time. If Shanahan's suppositions were correct that the pitting in CR 39 is caused by either explosions due to chemical reactions or to O<sub>2</sub> attack, those reactions would have occurred on both the bare Ni and Au coated Ni halves of the cathode and both halves would have shown pitting of the CR 39 detector. This was not observed.

Triple tracks in CR 39 are diagnostic of the carbon breakup reaction due to interactions with  $\geq 9.6$  MeV neutrons and is the most easily identifiable neutron interaction with the detector.<sup>19</sup> These triple tracks have been observed on both the front and back surfaces of the CR 39 detectors.<sup>19,20</sup> They have not been observed in CR 39 detectors used in either control experiments or blanks. The triple track shown in Figure 12 of the K&M review is similar to those observed in CR 39 detectors that have been exposed to a DT neutron source. Fig. 2 compares Pd/D co deposition generated triple tracks with those created upon exposure to a DT neutron source. Both sets of tracks are indistinguishable. Fig. 2a and b are examples of symmetric triple tracks while those in Fig. 2c are asymmetric triple tracks.

## 2.5 Temporal correlation between heat and <sup>4</sup>He

The China Lake experiments on the correlation of heat and helium 4 production carefully ruled out contamination.<sup>5,21</sup>



**Fig. 1** CR 39 results for Pd/D co deposition done on Ni screen cathodes. (a) Photograph of CR 39 used in an experiment performed in the absence of an external field. The impression of the Ni screen is observed. Photograph was obtained from S. Krivit, New Energy Times. (b) Photomicrograph of CR 39 used in an experiment performed in the presence of an external magnetic field, 20 $\times$  magnification. Tracks are observed inside the eyelets of the Ni screen. (c) Photograph of the composite electrode used in a Pd/D co deposition experiment done in the absence of an external electric/magnetic field. The top half of the cathode is bare Ni screen, the bottom half is Au plated Ni screen. (d) Photomicrograph of CR 39 in contact with the bare Ni half, 20 $\times$  magnification. The impression of the Ni screen is observed. (e) Photomicrograph of CR 39 in contact with the Au coated Ni half, 1000 $\times$  magnification. Tracks are observed.

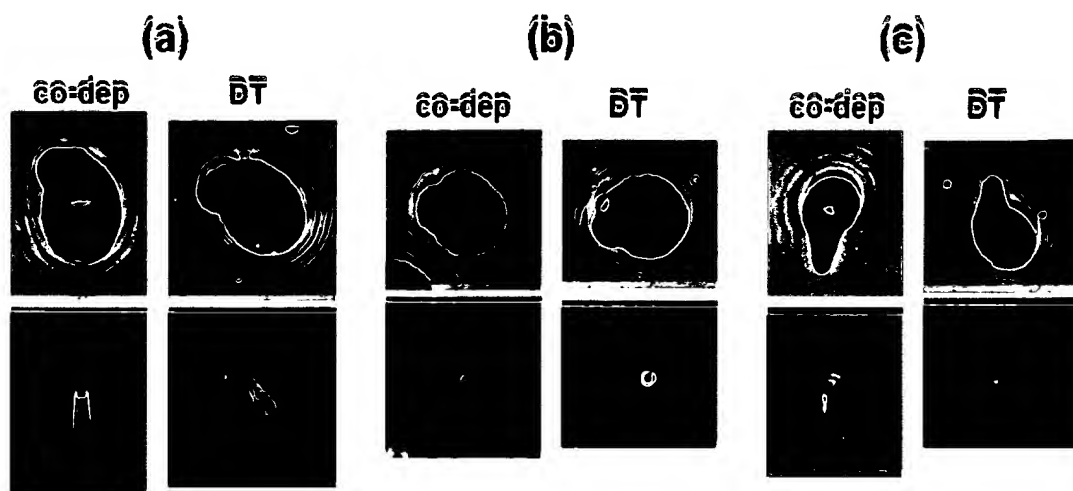


Fig. 2 Comparison of Pd/D co deposition generated and DT generated triple tracks.

Control cells were run in the same manner as the cells that produced excess power. Excess helium 4 was measured in 18 out of 21 cells that produced excess heat. None of the 12 control cells yielded excess heat or showed excess helium 4 production. The random probability of obtaining the correct heat/helium 4 relationship in 30 out of 33 studies is 1 : 750,000 (see Appendix C of Ref. 5). Furthermore, it is very unlikely that random errors due to contamination would consistently yield helium 4 production rates in the appropriate range of D + D fusion of  $10^{11}$ – $10^{12}$  atoms/s per watt of excess power.<sup>5,21</sup>

Case<sup>22</sup> reported production of extra energy by nano particles of palladium on the surface of charcoal when the material was exposed to D<sub>2</sub> gas at temperatures up to 175 °C. McKubre *et al.*<sup>23</sup> replicated the claims. The results of this experiment are shown in Fig. 3a. This is the Figure 6 in the 2004 report prepared by Hagelstein *et al.*<sup>24</sup> that Shanahan discusses. This plot illustrates the real time correlation between excess heat and the growth of <sup>4</sup>He concentration in a metal sealed, helium leak tight vessel that was observed in the SRI replication of the Case experiment. In his critique, Shanahan briefly touches on the quantitative and temporal correlation of excess heat and <sup>4</sup>He production with an odd argument posed as a rhetorical question: “If in fact there is no excess heat, then what exactly is being plotted on the Y axis?” Where does the “fact” that “there is no excess heat” come from? It comes from the strained logic that the CCSH “explains all excess heat results.” As discussed above, CCSH has no validity. Plotted on the X axis of Fig. 3a is the increased level of <sup>4</sup>He measured in samples drawn from a helium leak tight vessel. Again in his critique, Shanahan asks: “If there is no proof that the observed He is not from a leak, then how does one know that is not what is being plotted on the X axis?” This is easily explained. The shape of the measured <sup>4</sup>He vs. time curve is quantitatively different from that of a convective or diffusional leak of ambient <sup>4</sup>He into the closed cell. The measured and plotted [<sup>4</sup>He] first remains constant (no leak), then rises approximately linearly to roughly twice the ambient air background level. A shape consistent with the hypothesis Shanahan proposes would be exponential with greatest slope at time zero and rising asymptotically to the environing background level (5.22 ppmV). So an explanation invoking an in leak from the ambient can be seen to fail quantitatively.

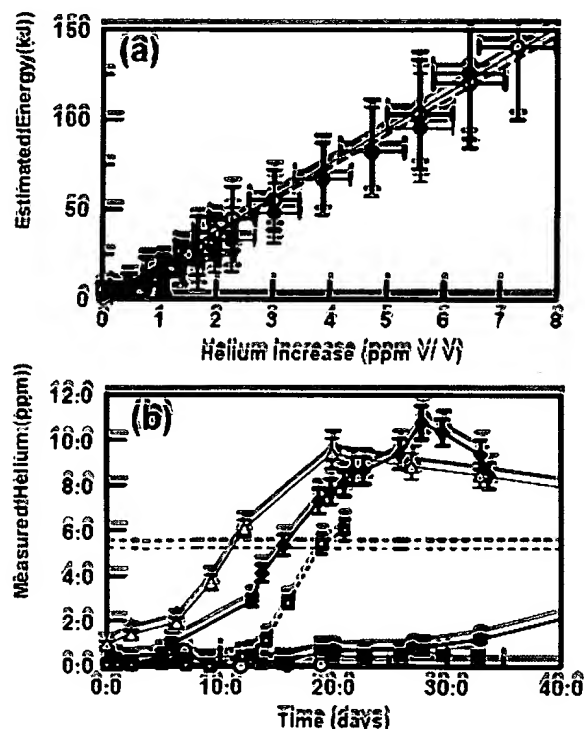


Fig. 3 Summary of SRI results on the Case replication. (a) Plot showing correlation between <sup>4</sup>He and excess heat where ○ are gradient data points ( $y = 18.36x$ ,  $R^2 = 0.99$ ); ■ ■ ■ is gradient  $Q = 31 \pm 13$  MeV/atom; ● are differential data points ( $y = 18.89x$ ,  $R^2 = 0.95$ ); — is differential  $Q = 32 \pm 13$  MeV/atom. (b) Helium 4 increase in sealed cells containing Pd on C catalyst and D<sub>2</sub> (H<sub>2</sub>) gas where — ■ ■ ■ is <sup>4</sup>He in room air at STP; ■ is SC1; ● is SC2; ○ is SC3.1; ■ is SC3.2; □ is SC4.1; and △ is SC4.2.

Fig. 3b shows plots of the <sup>4</sup>He concentration, [<sup>4</sup>He], measured as a function of time. This is the Figure 12 that Shanahan discusses in his critique of the SRI replication of the Case experiment. In his critique, Shanahan questions the decrease in [<sup>4</sup>He] after day ~30. The original experimenters also noticed this, questioned it, and sought the explanation experimentally, quantitatively and with reference to the literature. At elevated temperatures <sup>4</sup>He absorbs

or adsorbs to a modest degree into or onto carbon; the measurements reported therefore reflect a slight systematic under measurement of the  $[\text{He}]$  consistent with the measured Q value correlation between the rates of heat and helium production. Shanahan impugns the mass spectroscopist by pretending superior knowledge of the variability of  $[\text{He}]$  in room air. The original reports indicate that each helium data point was developed by measuring  $^4\text{He}$  in a  $\text{D}_2$  standard, in the sample, and in room air. All three measurements are made for each data point. There is no fluctuation of  $[\text{He}]$  in room air as any level of actual experience or a simple calculation of the volume of helium needed would show. Nor is there an “unknown and therefore uncontrolled systemic error in the mass spectrometer results”.

### 3. Conclusions

Despite Shanahan's unsubstantiated allegations, LENR researchers are well aware of the necessity for controls to verify proper instrument function while eliminating more prosaic explanations for the observed effects. Indeed, peer reviewed published papers and conference presentations have long disproved Shanahan's chemical/mechanical suppositions regarding LENR observations. Furthermore, contrary to Shanahan's assertions, the observed effects are often several orders of magnitude larger than the measurement errors. For example, in a variety of experiments, the solid state nuclear track detector background was less than 1 track/ $\text{mm}^2$  whereas the signal exceeded 10,000 tracks/ $\text{mm}^2$ . Both Swartz and a team at Energetics have reported excess power an order of magnitude greater than the input power in electrolytically driven systems.

Similarly, LENR researchers have replicated the LENR effect in a variety of electrolytic and gas loaded systems. First Miles, and later both De Ninno and an exhaustive effort by SRI, correlated  $^4\text{He}$  production with heat in electrolytically loaded systems. Later, SRI replicated the  $^4\text{He}$  heat correlation in gas loaded systems with Case's Pd/carbon catalyst and Arata's double structured electrode. Excess heat production in Szpak and Mosier Boss' electrolytic Pd/D co deposition system was first measured by Miles and then replicated by Letts. Kitimura and Ahern have both replicated excess heat from Arata and Zhang's gas loaded Pd/ $\text{ZrO}_2$  nano structures. However, reproducible heat production in bulk Pd is still an issue, with much to be learned about Pd metallurgy and batch to batch variability. Indeed, material irreproducibility plagued the semiconductor field for decades and is still a concern with high  $T_c$  superconductors. This is not a new phenomenon for a new and emerging field. In conclusion, reproducible control of LENR has been difficult to achieve because of multiple factors including significant Pd/D loading, adequate loading times (sometimes weeks), loading rate, deuterium flux, lattice prehistory, and electrolyte/cathode compositions.

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## SURVEY

### Survey of the Observed Excess Energy and Emissions in Lattice Assisted Nuclear Reactions

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**Abstract**—Lattice assisted nuclear reactions (LANR) are real, and offer a clean, efficient potential new source of energy production. Two decades of LANR R&D have confirmed excess heat production, and other clearly nuclear phenomena, using electrolysis and other gas loading techniques. Requirements for success include incubation time, high loading of  $>90\%$  PdD<sub>x</sub>, and other requisite conditions difficult to achieve. Several types of LANR now exist, as well as LANR metamaterials, and several types of triggering and control methods. In LANR, excess heat and helium-4 are the usual products, but charged particles, tritium, and the sequelae of neutrons can be sometimes detected. Excess power gains up to 200–400%+ have been reported. Given the prevalence of the fuel, and the incredible efficiency, LANR could be an important revolutionary technology.

**Keywords:** palladium—excess heat—lattice assisted nuclear reactions—deuterium—deuterons—loading—flux—excess power gain—optimal operating point

#### 1. Background: Brief Survey of Lattice Assisted Nuclear Reactions (LANR)

LANR [1–44] enable deuterium fusion. They are incredibly clean and free of pollution, all toxic emissions, all carbon footprints, all greenhouse gases, and radioactivity, while obviating fossil fuel. The deuterium is plentiful in the oceans. But the problem with this new technology is that the first published LANR reaction involved the 1989 Pons-Fleischman (Drs. Martin Fleischmann [Southampton, UK] and Stanley Pons [Utah]; P-F) experiment which was called “cold fusion” [1, 2]. Before that, the term was originally introduced by Benjamin Franklin for fulgurites, created by atmospheric lightning discharging into sand. Rather than agglomerating sand, LANR’s core is quite different, involving a metal, like palladium, loaded fully with heavy hydrogen [45–51], obtained either from deuterons from heavy water or gaseous deuterium.

Cold fusion was widely, but not deeply, investigated in March 1989. P-F announced that the “electrochemical experiments” they had conducted had produced more energy (“excess energy”) than could be accounted for, either by input energy or by available chemical reactions. They speculated that nuclear reactions

were involved. Attention was directed to cold fusion which savaged its messengers for global sensation and to benefit special interests. Was there a substantive basis for this attack? Fusion had not been explored, and was not known to occur, at low temperatures or in solids in a lattice. High energy theoretical physics never involved a lattice in the nuclear calculations. And yet, in favor of LANR, this was not the first time a lattice was involved with coupling to nuclear effects. Mossbauer effects [52–54] preceded cold fusion, as did other physics and engineering calculations which would eventually prove cold fusion is consistent with physics. Although the Mossbauer effect involves nuclear decay, it also shows a coherent momentum coupling to the lattice as a whole. The relevance to LANR is not the nuclear decay versus nuclear fusion, but the fact that the Mossbauer effect actually heralds one real existing case of nuclear lattice coupling. It is an example of a coherent linkage between the nuclei and electronic s-orbitals bathing them, coupling them to the entire solid state lattice. It demonstrates that the lattice is important in this branch of nuclear physics and must be considered, even if it was not previously.

In 1989, most efforts failed because of flawed paradigms, cracked inactive palladium cathodes, contamination (including from ordinary water), and most often, improper cell configurations, inadequate or questionable loadings, and incubation times. The patterns of failure have been many and have been discussed in detail elsewhere [1, 38], although in 1989 the physics community did not believe the initial P-F experiments since fusion was not known to occur at low temperatures or in solids. Today, the experimental facts rule. The initial failures, some which took years to understand, involved bad paradigms, questionable materials and loadings, but that is now resolved. Particle emission, excess energy, power gain, commensurate linked helium-4 production, increasing power gains and total energies achieved since 1989, all pave the way to an important, new, clean form of energy production: LANR.

Two decades of R&D, *sub rosa*, have investigated LANR phenomena ranging from excess heat production (far above the input), very low level but measurable emissions, thin films, and coupling to motors and electricity production systems. A few hundred credentialed scientists with diverse backgrounds continued to conduct careful experiments as they performed detailed data analyses using improved instrumentation, equipment, calibration, and controls. No single error or combination of errors on the part of all of the scientists can explain the developing results. They have been reported in over 3000 papers [55]. This paper will review a small, but worthwhile, fraction of the worldwide experimental work which saliently provides much compelling evidence that nuclear reactions can be assisted by a metallic lattice, PdD<sub>x</sub>.

As will be discussed in Section 8, LANR (cold fusion) is consistent with conventional physics. The LANR-derived “excess energy” begins at high energy, in the excited state of helium, which is obtained from reactions between deuterons within the lattice. That helium-4 excited state is either the first excited state, or one energetically located above it, all at least 20 million electron volts (20 to ~23<sup>+</sup> MeV) above the ground level. This is significant in magnitude and clearly

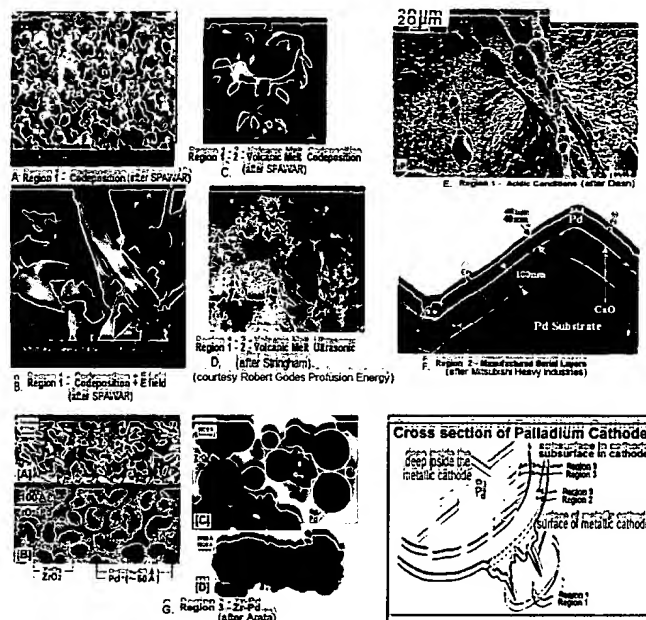


Fig. 1. Diversity of palladium LANR sites and nanostructures.

not “low energy”, as often (mis)claimed. As such purported “low energy nuclear reactions (LENR)” are a misnomer, a paradoxical description of what is actually not observed. Furthermore, if these are low energy reactions, why even bother? Fortunately, they are high energy reactions.

Today, LANR research involves electrolytic (with solution resistance ranging from conventional to “high impedance” devices in the range of 200,000 ohms), gas loading, gas permeation, ion beam, and glow discharge loading techniques and devices. They run in both open and closed systems, at pressures up to 10,000 psi, and driving motors, with on-line monitoring, redundant, high precision, time-resolved semiquantitative calorimetry.

What has been learned? That LANR is real and generated in one of three different sites within the solid state, deuteron-loaded, metallic palladium lattice [42] (Figure 1). Each location has its own, differing, rate of excess heat, tritium, and helium production and appears to be linked to a different group of optimal operating point (OOP) manifolds characterizing active LANR samples and devices [39–44].

The fuel for LANR is the deuteron. It is driven into the metal by the applied electric field intensity or by gas pressure applied. In most cases, the product is an extraordinary amount of heat. Commensurate with the amount of excess heat is the “ash”, usually *de novo* helium-4. The important point is that from those high energy levels of  $\text{He}^{4*}$  made in LANR come the observed excess energies in those difficult-to-achieve loaded lattice conditions, under some conditions.

These reactions are complex, and under some conditions, tritium and other emissions result. Some of the variety of regions involved both within, and upon, the metallic lattice is shown in Figure 1 [42]. Like hot fusion, the keys are containment, time, and density, but with flux substituted for temperature [1, 37, 43, 44, 56, for example]. This first key for LANR is that the PdDx alloy must be driven, usually electrically, to extremely high loading, until it is filled and almost bursting like a sponge with water. The electrode must accept and maintain high loading for excess heat (>90%), for a sufficient incubation time, up to several hundred hours. Why? Vacancies must drift into the bulk from the surface, slightly facilitated by the loading itself [7, 56–58].

The additional keys for LANR are that there must be integrity of the loaded alloy; a condition difficult to achieve, although it is circumvented to some degree by the codeposition methods, albeit with their limitations [5, 7]. As the lattice loads, it swells. Too much swelling yields irreversible failure, just like a swollen, burst balloon. Another requirement is that deuteron flux must continue, within and through the already highly loaded lattice.

LANR success is rewarded by “excess heat”, which means that the energy producing reactions have generated *de novo* helium into the lattice ( $\sim 10^{12}$  for every watt-second), and those conditions were adequate to enable energy transfer to the lattice. LANR success also means that significant energy (think,  $E = mc^2$  from the tiny difference between  $D_2$  and  $He^4$ ) is released rather than the low energy released by “burning” the deuterons into heavy water. There is more heat released than if the entire cathode were substituted for an equivalent quantity of TNT, but in this case it is safe, clean, and efficient.

## 2. Varieties of LANR

The LANR method which P-F first taught in March 1989 had problems, including inefficient reproducibility, and a requirement for very high loading with long incubation time. This created havoc for those inexperienced in metallurgy, electrochemistry, and physics. Today, briefly, there are several types of LANR; conventional (F-P), two types of codeposition (JET Energy, SPAWAR), dual cathode (Arata) systems, and a variety of other loading systems.

On one hand, development for high power has led to today’s high electrical solution resistivity LANR systems (very low levels of electrolysis yield superior excess heat levels pioneered by JET Energy) and then LANR metamaterials (JET Energy [59]). Metamaterials use shapes engineered to control deuteron flux, even at equilibrium, and even after loading, such as shown in Figure 2. The Phusor® spiral cathode system, with its open helical cylindrical geometry, in a high electrical resistance solution, creates a unique and unusual electric field distribution [59]. There is an anomalous effect in those portions of the cathode closest to the anode. This results in both deuteron loading flux from the solution to the electrode, and intra-palladium deuteron flux [59].

This configuration is a new kind of Pd/D<sub>2</sub>O/Pt and Pd/D<sub>2</sub>O/Au engineered LANR structure with impressive energy gain and fairly good reproducibility [4, 7,



Fig. 2. Phusor LANR cathode in high electrical resistance solution. (Left) 2-D vector E-field distribution for two parallel, infinitely long, wire electrodes (anode at the top, and cathode wire). (Middle) 2-D vector E-field distribution for the wire-PHUSOR®-type LANR system. (Right) Close-up of cathode showing asymmetric bubbling. This heralds flux through the loaded metal, which differs from how others approach the problem.

10, 60]. These contain low paramagnetic content heavy water creating a unique, distinguishing electric field distribution quite different from customary wire-wire and plate-plate systems. LANR metamaterials, and high loading systems (included those explored by IENA, Energetics) and metallurgically engineered electrodes (NRL, SPAWAR, JET Energy), all point the way to high output powers and efficiencies.

On the other hand, codeposition LANR systems point the way to speedy onset for some of the reactions. Codeposition yields faster results without the prolonged incubation times. In codeposition systems, fresh Pd and D plate out together on the cathode. Highly expanded surfaces, nanoscale spherical nodules dominate on the growing surface. Cyclic voltammetry and galvanostatic pulsing experiments indicate, and excess heat measurements herald, that a high degree of deuterium loading (with an atomic ratio  $D/Pd > 1$ ) is obtained within seconds. The results to date indicate nuclear reactions which occur very near the surface of the electrode (within a few atomic layers). In the original JET Energy Pd/D codeposition process, working and counter electrodes are immersed in a solution of palladium solution with neither chloride nor lithium, deposited on palladium. In the SPAWAR Pd/D codeposition process, working and counter electrodes are immersed in a solution of palladium chloride and lithium chloride in deuterated water, deposited onto silver, gold, or copper. There are physical differences in the two types involving deep diffusion [5], where Pd is deposited either on palladium (like Dr. Swartz) or upon non-loading materials such as copper, gold, silver, or platinum (like SPAWAR).

SPAWAR and JET have investigated the physical changes, the excess heat generation, hot spots with calibration showing near- and far-infrared (IR) emission (Figure 3). JET Energy's and SPAWAR's (near- and medical IR imaging) have revealed that in LANR there are cathodic hot spots, and not just Joule heating in the solution (IR drop). The desired reactions producing excess energy



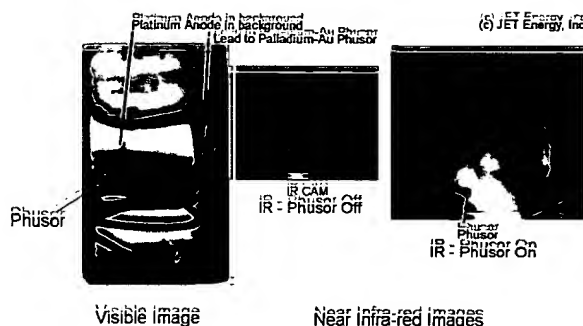
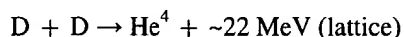


Fig. 3. Visible and near-IR images of a DAP Phusor® type LANR device in heavy water before and after activation.

yield localized hot spots (Szpak). The calibrated imaging of these localized hot spots, using an IR camera, reveal non-thermal near-IR emissions correlated with excess heat (Swartz) in active LANR devices by in situ monitoring [11] (Figure 3). This discovered non-thermal IR is linked, and specific, to the presence of excess heat production and not their physical temperature. This confirms the Swartz-Verner hypothesis that in LANR, unlike hot fusion, bremsstrahlung emission, under increasingly lower temperatures, shifts from penetrating ionizing radiation toward skin-depth-locked infrared radiation [61].

### 3. The Products of LANR

In LANR, excess heat and helium are the usual products, but charged particles, tritium, and the sequelae of neutrons can be sometimes detected. Excess heat and helium production are the dominant reactions. Melvin Miles of China Lake with Johnson-Matthey Pd rods was the first to show the correlation of heat and helium-4 production. Arata and Zhang reported *de novo* He<sup>4</sup> with LANR, including with Zr<sub>2</sub>O<sub>4</sub>/Pd powder exposed to deuterium gas, but not with hydrogen gas. Les Case ([28]; NH), using LANR with platinum group metals on carbon catalysts, reported He<sup>4</sup> production from deuterium gas. As a result of these findings, but ignoring the impact of the lattice for the moment, the reaction is something like



Energy and momentum are conserved in LANR [49, 62, 63], and because of the unique relationship to the lattice, the helium generated is moving slowly, at low velocity, very unlike hot fusion (discussed below). The He<sup>4</sup> which appears is retained in the cathode, until very high temperatures (~850C). The peak energy is consistent with the relatively low energy, but penetrating, ionizing radiation. Miles (China Lake, USN) and M. Srinivasan (Bhabha Atomic Research Center [BARC]) independently used dental x-ray films on the outside of this apparatus; they became fogged indicating low energy x-ray production.

In rare conditions, tritium production has been seen. In India, M. Srinivasan from BARC reported tritium in 1989. John Bockris (Texas A&M) reported tritium in bursts but the tritium was not accompanied by measurable heat, which he measured in other experiments. Szpak (SPAWAR) in open cells reported 3000 to 7000 atoms per second for a 24 hour period. Ed Storms (LANL) reported excess tritium in 10% of his cells.

Some experiments have detected very low number neutrons and charged particles with short range. M. Srinivasan (BARC) reported neutrons in 1989. As the current increased beyond 100 amperes, neutron signals, in bursts, resulted in 6 of 11 cells. X. Z. Li (Tsinghua U) first used CR-39 in his 1990 Pd gas loading experiments to detect energetic charged particles [64]. CR-39 is a polyallyldiglycol carbonate polymer, widely used as a time-integrating, solid state, nuclear track detector. Larry Forsley (JWK International) and Mosier-Boss (SPAWAR) have reported D-D and D-T possible reaction pathways capable of generating the observed charged particles, neutrons, etc. Their CR-39 tracks indicate possible neutron interactions, including carbon shattering. Some tracks herald D-D and DT reactions. Etching suggests uniformity in the 2–8 MeV range. The triple tracks, found in ~5–10 of their experiments, indicate energetic neutrons having shattered a carbon atom. Also observed in LANR systems are post LANR mini-explosions, ionizing radiation, and neutron production, and tritium production. These observations of significant quantities of high energy charged particles, and emissions, in LANR systems, suggests that there is accumulating, near overwhelming, evidence that nuclear reactions in, and assisted by a lattice, are initiated at low energies.

#### 4. Megajoules of Excess Energy

P-F reported excess energies of 4 megajoules in 80 hours. Similar amounts are seen in Figures 4 and 5. Several LANR devices show excess power gains from 25% to several times input electrical power, beyond the controls. High impedance LANR devices have shown power gains 200% to 400%, and one has yielded 8000% power gain for a short time. JET Energy has shown that some electrodes, of specific shape, are metamaterials which produces excess heat of a superlative magnitude, successfully driving Stirling engines at the 1–19+ watt level [3, 4, 6, 7, 39–41]. In 2003, JET demonstrated a working LANR high impedance PHUSOR-type LANR systems for 5 days at MIT at ICCF-10, producing ~230% excess energy at the 1–2 watt level.

Representative time histories (Figures 2 and 3) show both input and output electrical powers and energies. The input electrical power was switched manually between the LANR device and the resistor (“Control”). Integrated total energy for electrical input (solid red line) and thermal output (dashed blue line) are shown. The data marked by “PHUSOR” heralds electrical power supplied to it. The input electrical power is taken as  $V \cdot I$ , so the excess heat measured was a lower limit to what occurred. An excess heat is induced at low power with a gain near 200%, after which the system is taken to higher input power, where the

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# **INPUT AND OUTPUT POWER AND ENERGY of Pd PHUSOR [D2O, Pt spiral] and JOULE CONTROL**

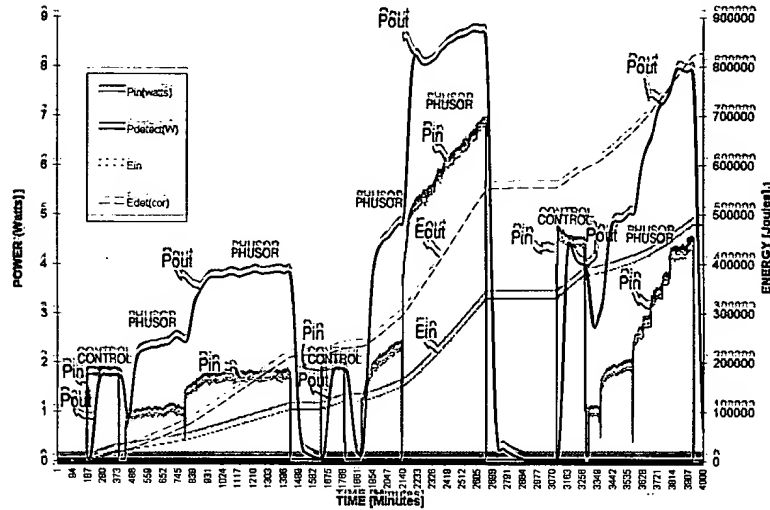


Fig. 4. Input electrical power (solid red line) and output thermal power (solid blue line) of a single ohmic calorimeter as a function of time.

## **Input and Output Power and Energy for Pd D2O Pt Phusor**

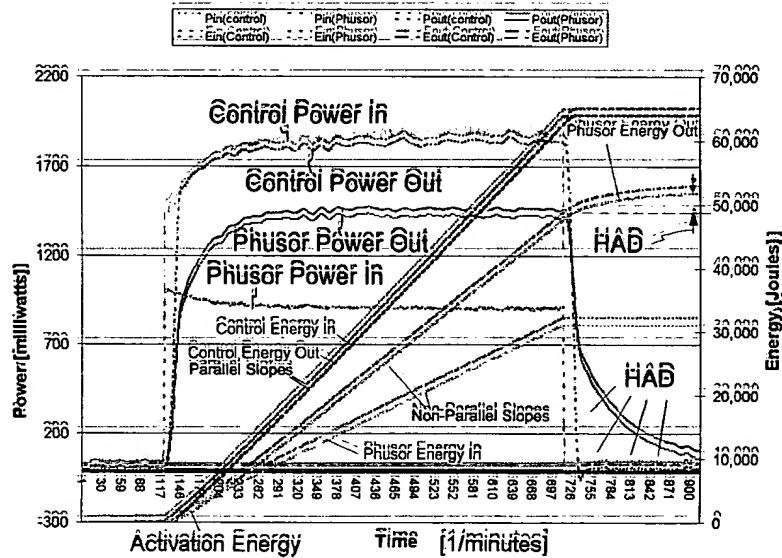


Fig. 5. Input electrical power (solid red line) and output thermal power (solid blue line) as a function of time for a Dual Ohmic Control (DOC) Calorimeter showing and activation energy, power gain, excess heat, and "heat after death" (HAD) which occurs after the termination of input electrical power.

power gain is lower, near 130%, followed by another calibration pulse. After this, the cell produces excess heat under varying conditions. The total input energy over 4000 minutes is illustrated by the solid red line, giving a result near 480 kJ. The total output energy over 4000 minutes is illustrated with the dashed blue line, giving a result of about 820 kJ. One observes in this run an energy gain of 1.7.

It can be seen in Figure 3 that the observed output power is much greater for the deuteron-loaded system as compared to the joule control and thus, there is excess heat. Two additional curves, the result of time-integration, on Figure 3 support the excess heat of the deuterium-loaded palladium system compared to the control. Figure 3 also has the integrated energy curves. It can be seen that for the ohmic joule (thermal) control the integrated energies of the input and output arise in parallel. By contrast, in the deuterium-loaded heavy water systems, there is an expanding gap which is not parallel but which increases over time, corroborating that there has been excess heat generated; more than 50,000 joules compared to the control.

The most important point is that even if one were to replace the entire cathode with TNT, one would only get 1.2 kilojoules on explosion. The excess energy observed with LANR is greater than any known chemical reaction. The second most important point is that the excess energy brings heat and changes wrought upon the electrode. SPAWAR, JWK, Stringham, Dash and others have reported volcano looking pits in electrodes. These induced pits are important for two reasons.

First, these features require a lot of local heat to produce the focal melting of the Pd, require substantial energy expenditure in order to form, again consistent with a nuclear source, not chemical. Second, SPAWAR [12, 20, 22, 23], Mitsubishi Industries (Japan) [37], George Miley (U of Illinois) [65], and others have shown elements appearing only at these unusual sites, which are consistent with nuclear, possibly even fission, products, some of which could not be extracted from cell components.

The heat diffuses away from the cathode, the site of LANR activity. Szpak, Mosier-Boss and Frank (SPAWAR) have shown that the temperature of the cathode is greater than the solution for codeposition. Swartz has shown how the temperatures change between anode and cathode as the OOP is reached. Modern calorimetry systems routinely employ calibration including thermal ohmic, metallic controls, and thermal waveform reconstruction. JET Energy measures the background noise, displaying it in "thermal power spectrograms" showing both input and output power, and energy by time-integration (Figures 4 and 5). These are supplemented calorimetry with up to five corroboratory measurements including heat flow measurements, electricity production, and paired, LANR-coupled Stirling motors.

## 5. Triggering LANR

There are two ways to control LANR—triggering and maintaining one OOP. Successful LANR requires critical control of input power, the OOPs of the driven

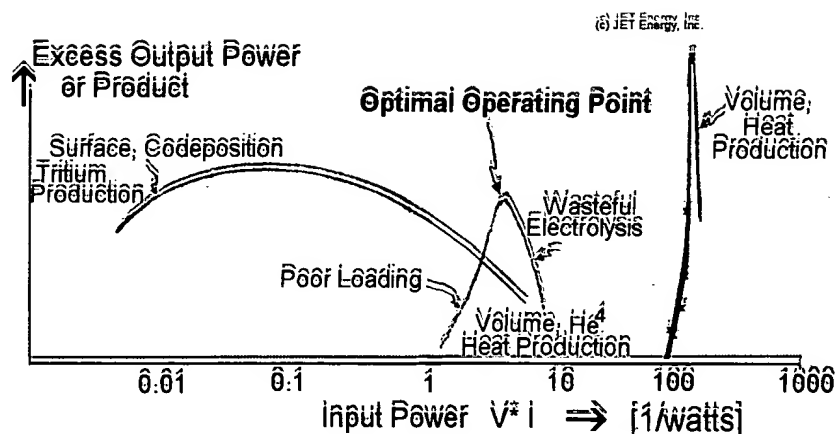


Fig. 6. Three LANR OOP manifolds.

systems, loading (> 85–90%), and loading flux. Worse, the driving and loading fluxes needed for the reactions have a side effect. They can easily destroy a Pd specimen making it never work again. This occurs because there are complex metallurgical problems which involve swelling grain size and changing orientations, occurring at increased loadings, deforming the lattice. More than 1 gigapascal pressure produces stress, strain, cracks, deloading, and the usual “fatal” cracking.

JET Energy has examined the impact of laser irradiation on LANR cathodes, and reported in 2003 that part of the impact is due to reflection off of the cathode back into the double layer. There, deuteron injection into the palladium increases (activation energy of ~14 kilocalories per mole) from microwave rotation and IR vibration for the intermolecular transfer of deuterons to the Pd [10]. Hagelstein, Letts, and Cravens [29, 66] have reported both single and dual photon impacts on cathodes.

The important point is that several types of experiments have revealed that input energy levels of less than 10eV (involving the applied electric field, with or without additional visible light irradiation) can successfully stimulate production of excess heat of megajoules and, on occasion, stimulate nuclear by-products, including neutrons which have been detected at energies exceeding 12 MeV [23].

## 6. OOP LANR Operation

JET Energy reported that anomalous energy gain in metal deuterides became a more reproducible phenomenon as system operation was guided using continuum electromechanics. It revealed that there are narrow regions of optimal excess power generation, and peak helium-4 or tritium production, each when viewed as a function along the electrical input power axis (Figure 6). In Figure 6, the three

OOP manifolds show LANR systems response for excess power gain, *de novo* helium and tritium production, for several LANR systems, including codeposition and palladium-black nanomaterials. The peak of each of these relatively narrow biphasic functions is the OOP. The OOP peak is only one operating point at which the LANR system can be driven. The other possible operating points at which the system can be driven are not “optimal”, but are within the OOP manifold.

OOPs are complex, often more than one, and they can change shape and size over time. During situations in which excess power is generated from an active LANR sample or device, large changes in LANR output, such as excess power gain, are observed as the input power is varied over a relatively small range. Over the years, the OOP approach to LANR has been quite successful (JET Energy [38–41]; JWK [67]; Innoventek [68]). The development of OOP technology has been one of our most useful assets in this research. Most importantly, OOP operation allows control and better understanding of LANR systems. For example, there are the corresponding matched peaks for heat production and helium production in the Pd-D<sub>2</sub>O system, in an entirely different regime for tritium production and Pd nanomaterials.

Second, OOP behavior is a general property of most, if not all, LANR systems. OOP manifolds appear to be universal, describing a large group of LANR systems and their generated excess heat, incremental helium-4, and tritium production. OOPs characterize output for heavy water helium production, for excess heat production from general LANR systems and devices, for high impedance LANR devices, for codeposition systems and codeposition PHUSOR LANR devices, for tritium generated from codeposition and “P-F”-type heavy water systems, and for excess heat and helium production in palladium-black systems (Figure 6).

Peak LANR performance occurs with production of heat and He<sup>4</sup>, or tritium, at their two OOPs which exist at two different locations in electrical input power space. As a result, OOPs explain a vast set of experimental data, not otherwise explicable.

Third, when the data is thus organized, it formidably dispels any arguments that LANR research is not reproducible. Fourth, OOP operation enables researchers to “standardize” samples and devices, which has led to several discoveries, including those which only occur when the LANR sample or device is driven at the OOP (including maximizing and controlling “heat after death”, the response to incident coherent optical radiation, and non-thermal near-IR emission).

## 7. Transmutations from LANR

The production of helium-4 *de novo*, making the excess heat, when a LANR device is driven at its OOP is a transmutation. Other transmutations do not produce heat, such as when tritium is produced. Iwamura (Japan, Mitsubishi Industries) reports transmutation by deuterium gas permeating through palladium which has barriers of cesium and calcium oxide. The cesium content drops, and praseodymium appears (also strontium to molybdenum). George Miley (U of

Illinois), John Dash (Portland State), Takahashi (Osaka U), Karabut (Russia), DeNinno (ENEA Rome), Claytor (LANL), Arata and Zhang (Osaka), and Stringham (HI) have all reported shifts in isotopic ratios, although most have not semiquantitatively corrected for electrophoretic mobility (ie electrodeposition).

### 8. Theories Involving Portions of LANR

It cannot be true that only one single "theory" will fit all the solid state, nuclear physics, and requisite electrical engineering. They involve a complex non-linear, time-variant system including an overloaded metal lattice, stirring with flux, and electrical currents involving both electrons and deuterons and their holes. In time, also formed are low dielectric constant layers appearing spontaneously in electrical series (bubbles). There are second order applied fields. This is in addition to the electric fields, magnetic fields, and electromagnetic fields including optical, terahertz, and other irradiations, which LANR experimentalists use, which result from the drifting electrons, deuterons, and their holes. The bottom line is that no one theory can ever cover it all. Instead, there are several, and they fit conventional physics quite well [31, 44, 56, 58, 62, 63, 69–74].

The quasi-one-dimensional (Q1D [39–44]) model of loading, based on continuum electromechanics, has led to the discoveries of OOPs and the key roles of D-flux, solution conductivity, and cathodic irradiation by laser in LANR systems. Recently, coupling this with Laplace's law has uncovered the need for deuteron flux within the palladium in an already highly loaded (D/Pd) LANR system. The Q1D models most important insight is that the first order D-flux equation, with the substitution of the Einstein relation, shows that the ability to load D depends on the ratio of ordering energy (the applied electric field) to thermal disorder ( $k_B * T$ ) minus what goes up into the gas. The latter is perhaps most important because it reveals why so many have failed to generate successful LANR, because the name "fusion by electrolysis" is a misnomer.

How is fusion achieved? Are there "expected products"? In hot fusion without a lattice, the kinetic energy of 23.8 MeV charged particles (alphas) yields ionizations, Pd knock-off atoms, low energy X-rays, and heat. Secondary neutrons (by  $D[\alpha, n]$ ) have a small cross-section. Most physicists are more aware of the ionization and X-ray production of  $D + D$  impact physics without a lattice. In this hotter fusion, the products are fast moving helium (23.8 MeV  $\alpha$ -particles) which yields 22 keV Pd K shell X-rays and bremsstrahlung below ~4 keV. Conventional bremsstrahlung is ionizing penetrating radiation well-associated with hot fusion. In  $D + D$  impact physics without a lattice, neutrons and charged particles (fast moving helium ions,  $\alpha$  particles) are seen.

In summary, in hot fusion, the production ratios are about 50% neutrons with  $He^3$ , 50% tritium and a proton, and a tiny fraction (less than 1/1,000,000) as nuclear gamma rays. By incredible contrast, the production ratios observed for LANR reactions is mainly  $He^4$ , and negligible  $He^3$ , neutrons, and gammas of very low energies. Why is it different from hot fusion?

Historically, since 1989, cold fusion was ignored, along with the scientific facts, generally speaking. The basic truth is that the temperature of cold fusion, lattice, and the nuclear isospin control which products are observed. The physics in LANR appears conventional, but band energies, lattice and isospin issues, and temperature dependences must be addressed. First, not all emission branches from the excited state of  $\text{He}^{4*}$  are even spin-available. The gamma emission branch from the excited state of  $\text{He}^{4*}$  is actually spin-forbidden for both hot and cold fusion [62, 63]. However, at higher hot fusion temperatures the restriction is lifted slightly. This is consistent to what is seen for both hot and cold fusion.

Second, the relative absence of neutron and hard gamma-ray penetrating radiation in cold fusion appears to be due to the lack of availability for two different, but thermally linked, reasons. The first thermally linked reason is that the only nuclear branches available are those whose band gaps are surmountable by the available activation energy (limited by the ambient temperature and incident radiation). The neutron emission branch is more than 1 MeV above the first excited state ( $\text{He}^{4*}$ ). Hot fusion has large activation energies available (it is “hot”), whereas LANR (cold fusion) does not. In LANR, given the actual much smaller amount of thermal energy,  $k_B * T$ , available for cold fusion ( $\sim 1/25$  eV), absence of adequate activation energy decisively means that that branch is NOT available, as it is for hot fusion. Neutrons are not observed, helium production is in its stead.

The second thermally linked reason is that in the analysis for LANR, with the explicit incorporation of temperature into the bremsstrahlung equations, reveals that ionizing penetrating radiation by bremsstrahlung is not expected at low temperature. The bremsstrahlung shift (secondary to temperature and lattice availability) alters from what is expected at room temperature with the forward deposition of energy dropping by 18 orders of magnitude. Instead, at cold fusion temperatures, the penetrating ionizing radiation shifts to lower frequencies (to the near-IR) where the radiation is not longer ionizing, and where it is trapped in the palladium by the “skin-depth” effect. In fact, this shift to near-IR was later observed (and reported) in LANR devices when they were operated at their OOP. The result is non-thermal near-IR emission [11].

It is the lattice which is key to the final products. It controls the de-excitations to produce  $\text{He}^4$  in the ground state if there is coupling to though phonons. In hot fusion, the lattice—and therefore the coupling—are not there. In LANR/cold fusion, the fast moving  $\text{He}^4$  (as charged particles, alphas) are not seen because the phonons, each about 35–43 millieV, help the  $\text{He}^{4*}$  state shed  $\sim 20+$  MeV to return to the  $\text{He}^4$  ground state [7, 38, 57, 58, 71]. However, in a coherent lattice, there are enough phonons to enable transfer in the nanoseconds required. Hence the “excess heat”. Ergo, it is the lattice that opens up the new pathway. The many-spin, spin boson model [58, 61] has led to discoveries of how exchange energy between oscillator quanta enables coherent energy exchange. One *sine qua non* is that there be enough phonons (lattice vibrations) [7, 38, 57, 58, 71, 75]. If they act coherently, and if there are enough Frenkel defects, then the lattice appears to be



“oiled” enough for coherent energy transfer (this is from where the excess heat arises) from the very high energy nuclear state consisting of the nuclear helium excited state to the lattice [7, 58, 62, 70]. This unusual coupling in LANR, occurring from nuclear states to the lattice, is rare, requiring s-orbital interactions. It was first seen in momentum transfer to lattices (Mossbauer-type) experiments.

Other theories which improve nuclear state-lattice interactions are those involving Bose-Einstein condensates, poly neutrons clusters, and loosely coupled oscillators; each give a view to electron screening, an important physical factor in metals, astrophysics, and LANR. The catastrophic active media [56] theory models the unusual change in deuteron solubility that Pd demonstrates with temperature.

### **9. Advanced LANR Technology—Revolutionary Apps Just Around the Corner?**

LANR could become the energy multiplier saving the planet. The energy density of LANR reactions is 10 million times that of gasoline. The fuel is heavy water, obtainable from the sea which is already one part in 6000 a heavy hydrogen. Given the prevalence of the fuel, and the incredible efficiency, LANR could play a critical role in all future technologies with potential revolutionary applications to all energy issues—robotics, transportation, electricity production, space travel. Larger LANR power devices will fit into a hybrid car and offer methods to power in vivo medical devices such as the artificial heart. JET Energy, Inc. has already reported on thermal and efficiency issues of the electrical feedback loop, and has connected the excess heat to Stirling engines.

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electrophotochemotherapy for treating human tumors and infectious organisms, and sensors using composites of biomaterials and semiconductors. Research continues on medical inventions, unusual dielectrics and poled ferroelectrics, and lattice assisted nuclear materials and devices to be used for propulsion, electricity production, and artificial internal organs.

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## CATASTROPHIC ACTIVE MEDIUM (CAM)

## THEORY OF COLD FUSION

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## ABSTRACT

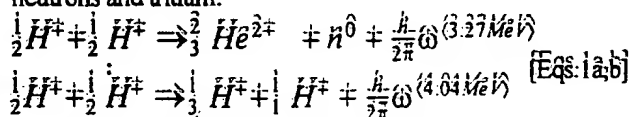
The catastrophic active medium (CAM) theory hypothesizes a two-stage system for cold fusion that ends with the production of the cracks that absorb and dissipate, rather than create, the energy required to activate the desired reactions. Following adequate deuteron loading, a local inhomogeneity of heat distribution in the metal is hypothesized to cause an in-situ fractional desaturation of the fully-loaded palladium. This desaturation is facilitated by optical phonons, coupled with deuteron transport. The CAM theory of cold fusion hypothesizes that these desired reactions occur at select vacancies and defects. Catastrophic deuteron, plasmon, phonon, and polaron fluxes are coupled with further exothermic deuteron desaturation to create an active medium and at least one positive feedback loop. There is possible internal conversion of any potential fusion reactions to the lattice by coupling through the phonons, already present from the desaturation, and polarons that increase the effective mass of the deuterons. A "γ"-state electron may stabilize the pre-fusion configuration. The dynamic instability continues either until the active media is drained or, by a second catastrophic process, the fusion-defect-site is no longer confined.

[Keywords: isotopic loading, catastrophic active medium, cooperative reaction, deuterium, palladium]

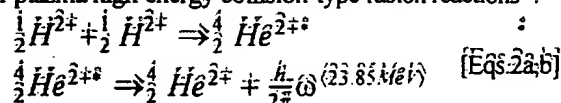
## INTRODUCTION

Deuteron-deuteron fusion remains elusive because of electrostatic repulsion between the deuterons<sup>1,2,3,4</sup>. Many theories of cold fusion in palladium hypothesize tunneling<sup>5</sup>, however within the crystalline metal the average internuclear deuteron separation distance in Pd is larger than diatomic D<sub>2</sub><sup>6</sup>. Tunneling may be facilitated by screening electrons<sup>7,8</sup>, changes in the effective mass of the electrons<sup>9,10</sup> and deuterons<sup>11</sup>, deuteron energy fluctuations<sup>12,13</sup>, coherent screening<sup>14</sup> and plasmons<sup>1</sup>. The coherent<sup>15</sup> and superradiance theories<sup>3,16,17</sup> further discuss the neutrons and increased electron density between deuterons. However, the tunneling probability remains vanishingly small until the D-D internuclear separation distance decreases to less than ≈0.7

Angstroms<sup>7</sup>, and the reaction probability is negligible until a few fermis<sup>1</sup>. Both the interdeuteron separation requirement and the lack of normal reaction products (as neutrons and gamma-rays) are required for a complete explanation of these phenomena. Further criticism of the cold fusion reports, including the putative generation of <sup>4</sup>He involves the skeptics' belief that the cold fusion phenomena duplicate the propensity of other distinctive pathways for deuteron fusion reactions in plasmas. Those plasma-type pathways create neutrons and tritium:



These two reactions have similar probabilities<sup>1</sup>. Their ratio is termed the branching ratio. The following coupled third and fourth reactions are one-ten millionth less frequent for plasma high-energy collision-type fusion reactions<sup>18</sup>:



All of the above have in common the emission of a high energy ionizing photon. But neither that normally obligatory emission = nor significant neutron emission = characterizes many of the cold fusion phenomena; therefore, a closer look at the physics is indicated. Is there an absolute reason that these emissions should characterize all fusion reactions including that within solid matter?

We began with an examination of the selection rules governing such nuclear phenomena. That re-examination of the physics has included the extended lattice, the integer spin of the two bosons, Fermi's Gold Rule of time-dependent perturbation theory<sup>19</sup> and Laporte's Rule<sup>18</sup> offer quantum electrodynamic selection rules. That examination has revealed that those selection rules actually forbid photon emission. Photon emission requires spin 1 conversion by an integer from the <sup>4</sup>He\* state, and there are no photons of spin 0 or spin 2. As a result, in the condensed state, fusion with such γ-emission may be forbidden. This forbidden nature (with the restriction lifted in hot plasmas probably due to

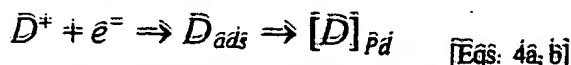
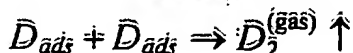
collision with paramagnetic particles) coupled with the CAM theory together may explain why neutrons are not seen, and why helium accounts for some of the ash with a non-plasma-type pathway (with a third of the expected amounts of ash given the generated excess heat<sup>20</sup>).

### $N_D$ = THE ATOMIC RATIO

Present theories consider the atomic ratio ( $N_D$ ) of deuterons to palladium:

$$N_D \equiv \frac{[D]_{Pd}}{[Pd]} \quad [\text{Eq. 3}]$$

At equilibrium and at low concentrations, the thermodynamic activity of the loaded deuterons is determined by the kinetic relationships between diatomic deuterium ( $D_2$ ) and the adsorbed deuterons including those states with charge transfer to the deuteron while in the metals (especially those at a surface or at a boundary between compartments). The equilibrium coefficient ( $K_{eq}$ ) defined between the two states at the surface is well-known and critically linked to the loading. The diatomic nature of deuterium and the role of charge transfer at the electrode surface are linked as well.



The definition of an activity coefficient ( $\alpha_D$ ) and the fugacity coefficient (which is applicable at low to intermediate concentrations at equilibrium) results in a radical in the numerical solution for  $[D]_{TOT, Pd}$ :

$$[D]_{TOT, Pd} \equiv N_D * [Pd] \propto \frac{K_{eq}}{\alpha_D * \beta_D^{1/2}} * P_{D_2, EXT}^{1/2} \quad [\text{Eq. 5}]$$

$K_{eq}/(\alpha_D * \beta_D^{1/2})$  is the Sievert coefficient ( $\delta_S$ ). Experiments have indicated that other terms are required for accuracy at higher concentrations such as the second below:

$$N_D \propto \left\{ \left[ \delta_S * \left( P_{D_2, EXT} \right)^{1/2} \right] + \left[ \frac{\left( P_{D_2, EXT} \right)^{1/2}}{K_2 + \left( P_{D_2, EXT} \right)^{1/2}} \right] \right\} \quad [\text{Eq. 6}]$$

$K_2$  is the constant used to optimize the fit with experimental findings. There are several problems. First, the actual net quantity of deuterons in the metal  $[D]_{TOT, Pd}$  is related to the average volumetric loading,  $N_D$  (which is both spatially and time varying) by the spatial integral:

$$[D]_{TOT, Pd} \equiv \int_{L_C}^{L_C+W} A * \left[ \frac{[N_D(z)] * [Pd]}{+ [D_2]_{Pd}} \right] dz \quad [\text{Eq. 7}]$$

Second, much information is lost by averaging the

various occupancies as a simple lumped parameter. Third, the system may not even be at equilibrium. Fourth, although the quantity of deuterons are derivable (albeit at equilibrium) from the surrounding partial pressures of deuterons and the availability of all sites for all deuterons (including both as  $D$ ,  $D^+$ , and  $D_2$ ); this is quite complicated because of molecular (dideuteron) dissociation, adsorption, recombination, entry to the electrode (of both  $D$  and  $D_2$ ), and other reactions in which the deuterons can participate with further additional mass and energy transfer<sup>21</sup>.

Fifth, there are several problems with the relationship between fugacity and pressure<sup>22</sup>.  $\Theta_{D, Pd}$  is the deuteron fugacity within the metal, which at low pressures and at equilibrium is proportional (by  $\beta_D$ ) to  $P_{D, EXT}$  which is the ambient deuterium pressure. Now  $P_{D, EXT}$  could be the applied external gas pressure (as  $D_2$ ) or could be an effective pressure created by electrophoretic continuum systems<sup>23, 24</sup> such as the application of an electric field in an aqueous heavy water  $LiOD$  system<sup>25, 26</sup>.

However, by whatever loading mechanism, the fugacity,  $\Theta_{D, Pd}(z)$ , may differ considerably from  $P_{D, EXT}$  which represents the external (or a solution) partial pressure of deuterium<sup>27</sup>. Most importantly, in closed systems this is a "zero sum" system because of conservation of mass. Therefore, in that case, the external pressure falls as the palladium first loads and, therefore, the fugacity ( $\Theta_{D, Pd}$ ) must increase. This effect is not paradoxical but is dependent upon the nature of the system and whether the system is open or closed.

Sixth, the system may not only be at thermodynamic equilibrium, but both the loading itself and the success of the desired reactions tend to wrought much change upon the materials. Therefore the CAM system was developed as an extension of the quasi-one-dimensional model<sup>21, 24, 27, 28</sup>.

### THE CAM MODEL

Given the complexities, this manuscript will consider several simplifications. First, we shall assume that the electrode is already fully loaded and that there are many mechanisms of material and geometric nature which can prevent full loading of any particular piece of metal. Deep scratches and irregularities can act as sites for the formation of  $D_2$  and prevent full and adequate loading by keeping the loading ratio ( $\alpha_{D, Pd}$ ) too low<sup>21</sup>.

The CAM model immediately begins following the successful loading of isotopic fuel into a metal and attainment of a sufficient number of deuterons within the metal actually able to participate to the desired reactions<sup>21, 27</sup>. For example,



electrochemical loading is used with a current  $i$ , and an electrical transference (efficiency) of  $\eta_D$ . The loading factor ( $\lambda_{Pd}$ ), the electric order/thermal disorder ratio ( $\xi$ ), and the quantity of deuterons contributing to fusion reactions ( $\Psi_{fus}$ ), and other parameters have been discussed<sup>21,24,27</sup>.

$$J_{fus} = \left\{ \frac{\beta_D \cdot (D)_{INT}}{L_D \cdot [1 + (\lambda_{Pd} \cdot D)]} \right\} * \left\{ \frac{\xi^2}{(1 - \exp(-\xi))} \right\} * \Psi_{fus} \quad [\text{Eq. 8}]$$

The model uses several special material properties of palladium, starting with its deuteron and hydrogen solubility and its hydrogen solubility-temperature relationship. Palladium holds so many deuterons (figure 1) that it acts like an "emphore" (e.g., vase<sup>28</sup>). Furthermore, unlike most metals<sup>10</sup> characterized by low absorption properties (~one deuteron per 10,000 metal atoms), the deuteron solubility in palladium is both large and decreases with temperature (figure 2). As a result, deuterium loaded into the metal may suddenly become an unwanted resident located within the metal lattice. Thus, the CAM hypothesis treats the metal as an active medium capable of rapid desorption. Some of the heterogeneity, and the time variance of the electrode, are also considered. In addition, the CAM model includes two possible positive feedback loops creating both the bursts and a plethora of termination sequelae.

#### $\Xi_D$ = THE QUANTITY OF AVAILABLE SITES

In the alternate CAM formulation, as discussed in part previously<sup>21,24,27,28</sup>, consideration is made of all types of sites in which the intraelectrode deuterons can reside. The CAM hypothesis attempts to separate  $\Xi_D$  into its component compartments.  $\Xi_D$  is the number of lattice sites actually available for decoration by the deuterons, and would thus consist of several types of shallow, and deeper, traps.

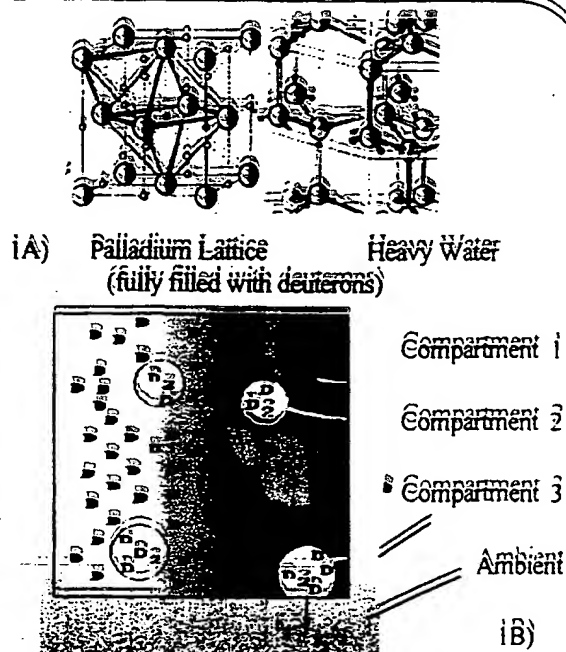
$$\left\{ \begin{array}{l} \Xi_D \Rightarrow \sum_{j=\text{sites}} \Xi_{Dj} \\ \Gamma_D \Rightarrow \sum_{j=\text{sites}} \Gamma_{Dj} \end{array} \right\} \quad [\text{Eq. 9a,b}]$$

Lumped Parameter  $\Rightarrow$  Discrete Model

#### $\Gamma_D$ = THE OCCUPANCY PARAMETER

Since there are several types of sites, the occupancy factor and number of sites must be iterated over all  $j$ -sites, and hence

$\Gamma_{DPd}$ . These sites include the octahedral and tetrahedral sites shown in figure 1A. The CAM theory additionally describes the palladium electrode by three compartments (confer figure 1b). This is based upon the metallurgical properties of the hydrided electrode. Compartment 1 is the deuteron-laden crystalline palladium. The second compartment is the location in which the desired reactions



**FIGURE 1 - COMPARTMENT MODEL OF FULLY LOADED PALLADIUM CATHODE**

Figure 1 schematically shows a volume of metal highly loaded with deuterium. Both the molecular (1A) and schematic continuum (1B) models are shown. 1A: the electrode as the CAM Model assumes it to be, that the palladium is fully loaded, as from electrochemical loading using heavy water. On the right side of figure 1A, heavy water is seen to be constructed from the "hydrogen"-bonded D<sub>2</sub>O in a near heavy ice-I<sub>h</sub>-like structure. As a result of both electric polarization and a molecular vibration, there is intermolecular deuteron transfer. The important net result small (arrow) is the filling up of one octahedral site within the palladium (located on the left side). The deuterons are represented as small spheres. The figure on the right side was adapted from J. Mara<sup>11</sup>. 1B: The bulk metal crystalline lattice is represented by a simple square, and is compartment 1, and neither its full periodicity nor its heterogeneous nature is stressed in this schematic figure. Also shown are reaction sites greatly enlarged - not open to the ambient - which may be filled with deuterons and homonuclear diatomic deuterium (possibly 4He) and which comprise compartment 2. With subsequent crack, fissure, or other dislocation formation, only one of which is shown on the lower right of the palladium, compartment 3 is formed.

occur. Possibly the second, and certainly the third compartments include the defects, grain boundary dislocations, and larger defects. With subsequent cracking, fissuring, or other dislocations opening the central portion of

the electrode to the ambient, the proportion of compartment 3 grows. Therefore, although both compartments 2 and 3 are both extraordinary palladium, compartment 2 is distinguished from 3 in that it is not patently connected to the ambient. The spatial integral now becomes a summation over all types of deuterium traps ( $\Xi_{Dj}$ )

$$[D]_{TOT}Pd \equiv \sum_j \left\{ \bar{\Gamma}_{D,Pd,i} \left[ \bar{Z}, \Theta_{D,Pd}, \bar{P}_{D_2,EXT} \right] \cdot \Xi_{Dj} * A^* \right\} \quad [Eq. 10]$$

$\bar{\Gamma}_{D,Pd,i} [\bar{Z}, \Theta_{D,Pd}, \bar{P}_{D_2,EXT}]$  is the nondimensional fractional saturation or occupancy parameter associated with each type of potentially filled or fillable site within the palladium electrode.  $\bar{\Gamma}_{D,Pd}$  is a function of the external partial pressure and fugacity of deuterium as cited within the brackets, and also temperature and some externally applied fields and forces. Because  $\bar{\Gamma}_{D,Pd}$  is the saturation parameter of D in Pd  $\bar{\Gamma}_{D,Pd}$  is 0 when the metal is void of deuterons and approaches 1 only as the metal becomes fully loaded.

Thus,  $N_D$  is related to the fugacity (internal pressure,  $\Theta = \Theta_{D,Pd}(\bar{Z})$ ) of the deuterons. However, in salient contrast to  $N_D$ , the total quantity of deuterons in the physical volume of metal,  $[D]_{TOT}$  has heterogeneity and reflects several terms. Those involve all the deuterons bound to the shallow-traps throughout the palladium lattice (compartment 1) and the amount of deuterons in all the reaction and defect sites.

#### $\chi_D$ = THE FRACTIONAL DEFECT PARAMETER

The amount of each compartment is related through the fractional defect parameter,  $\chi_D$ . Compartment 2 is hypothesized to be quite small [perhaps a small volume, just off-axis near the hypothesized  $\gamma$ -electron (See below)]. Compartment 3 grows over time. The fractional defect parameter,  $\chi_D$ , relates the volumetric amount of compartments 2 and 3. So there is  $1 - \chi_D$  compartment 1, or intrinsic periodic palladium lattice free of defects and significant dislocations. Thus, the final terms can be collected and organized by both decoration location and the metallurgical quality of the electrode.

$$\frac{[D]_{TOT}}{[Pd]} \equiv \left[ \left\{ (1 - \chi_{Pd}) * \bar{\Gamma}_D * \Xi_D \right\} + \left\{ (\chi_{Pd}) * \alpha_D * \bar{P}_{D_2,EXT} \right\} \right]$$

Total = Compartment 1 +  $\sum$  Compartments 2 & 3 [Eq. 11]

$\bar{\Gamma}_D$  is the fractional saturation of lattice over all sites.

$\bar{\Gamma}_D$  represents the sites potentially filled in both the octahedral ("o") and tetrahedral ("t") sites.  $\Xi_{Dj}$  is the number of each type of lattice sites.  $\chi_{Dj}$  represents the fractional volume of defects over both compartments 2 and 3. Note that in the first term, both octahedral and tetrahedral

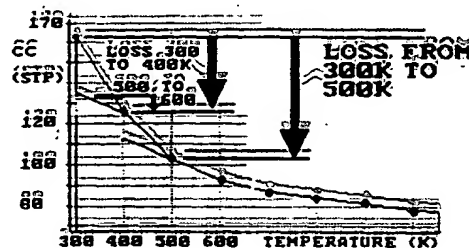


FIGURE 2 - DEUTERON LOADED PALLADIUM

The quantity of hydrogen in fully loaded palladium is markedly temperature dependent. The curve shows the quantity [cubic centimeters (STP)] which can be contained in 100 grams of palladium.

sites are considered. In the second term,  $j$  is iterated over compartments 2 and 3. The first term in equation 3 depends both upon the amount of deuterium binding material present, the number of intralattice sites available for the deuterons ( $\Xi_D$ ), and the affinity of the palladium lattice for those deuterons. The second term is modeled as conventional product of a Henry gas solubility-like coefficient ( $\alpha_D$ ) and the external deuterium partial pressure ( $\bar{P}_{D_2,EXT}$ ).

For the remainder of this paper, the approximation will be made to use equation 11 for simplicity, with the additional assumption that the parameters are the same for compartments 2 and 3 ( $\alpha_{D2} = \alpha_{D3} \equiv \alpha_D$ ). Also, the size of compartment 2 is assumed to be quite small, whereas compartment 3 grows with time (at the expense of compartment 1); that is,

$$\chi_{Pd,2} \ll \chi_{Pd,3} \equiv \chi_{Pd} \quad [Eq. 12]$$

Similarly, rather than carry  $\bar{\Gamma}_{D,Pd}$  along explicitly, for simplicity  $\bar{\Gamma}_D$  will be used. Finally, the normalizing ratio of  $[D]_{TOT,Pd}/[Pd]$  will be used. Therefore, it is approximate that

$$[D]_{TOT,Pd} \equiv \left\{ (1 - \chi_{Pd}) * \left[ \sum_{j=0,1} (\bar{\Gamma}_{Dj} * \Xi_{Dj}) \right] + \left\{ \chi_{Pd} * \left[ \sum_{j=2,3} (\alpha_{Dj} * \bar{P}_{D_2,EXT}) \right] \right\} \right\} \quad [Eq. 13]$$

In this simplified model,  $\chi_D$  is the fractional volume of defect sites (compartments 2 and 3) located outside of the fully filled ( $\beta$ -phase) crystalline palladium lattice.

Within the palladium lattice a number of active binding sites  $[Pd]_{TOT} * (1 - \chi_D) * \Xi_D$  enables the definition of the occupancy factor we call the generalized fractional saturation  $\bar{\Gamma}_D$ . The intraelectrode deuterium flux is thus the result of the

in-situ "depressurization". With rising temperature, the deuteron saturation [ $\bar{\Gamma}_D(T)$ ] falls in palladium<sup>12</sup> so markedly that there is a 7-fold decrease from 5 to 50 Centigrade<sup>13</sup>. This is assumed as the *raison d'être* for the rapid D-mass transfer from compartment 1 to 2 when the catastrophic desaturation begins.

The CAM hypothesis was examined by a computer model. Several qualitative approximations were made including that the temperature would increase extremely slightly locally with each putative fusion event that themselves would occur only secondarily to markedly increased deuteron pressures and local temperatures. These arbitrary kernels, chosen to find any case where this might occur are similar to some used in hydrogen diffusion analyses<sup>14</sup>.  $K_6$  and  $K_7$  are the coefficients to relate temperature and fugacity to the fractional saturation.

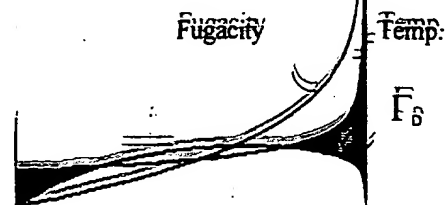
$$\bar{\Gamma}_D = \left[ 1 - \left( \exp[-K_6 \cdot \Theta_{D,Pd}] \right) \right] * \left( \exp[-K_7 \cdot T] \right) \quad [\text{Eq. 14}]$$

Figure 3 shows the output of a computer simulation used to test the CAM hypothesis. This gendanken metal is capable of exothermic catastrophic fractional desaturation. The curves shown in the figure are the normalized deuteron fugacity, temperature, and fractional saturation ( $\bar{\Gamma}_D$ ). With early loading there is a steady increase in deuterium content within the cathode, consistent with some models<sup>21</sup> and experimental observations<sup>24</sup>; and the deuteron fugacity [ $\Theta_{D,Pd}$ ] rises slightly. On the other hand, in closed systems conservation of mass results in  $P_{D,EXT}$  in falling as the loading begins; hence, demonstrating yet again the non-identity of  $\Theta_{D,Pd}$  and  $P_{D,EXT}$ . Notice the dynamic inversion of  $\bar{\Gamma}_D(t)$  as  $\Theta_{D,Pd}(t)$  and temperature reach crescendo levels.

After sufficient time (cf. right side of figure 4) compartment 2 is suddenly and catastrophically "fed deuterons" from the large vicinal volumes of the crystalline palladium lattice [compartment 1], further increasing the likelihood of temperature-incrementing reactions. After a certain point, a critical catastrophic event causes inversion of the fractional saturation as the temperature rises. This combined dynamic instability may result in local astronomic fugacities with concomitant intraelectrode deuteron flux.

The CAM hypothesis is that the desired reactions are driven by catastrophic fractional desaturation of deuterons, possibly focused, towards the reaction site. The thermodynamics of fully deuterated  $\beta$ -phase suggests that deuteron desaturation from  $\bar{\Gamma}_D = 1$  to 0.8 is exothermic<sup>15</sup> also consistent with the CAM model. The catastrophic transfer of deuterons to compartment 2 incrementally may increase the

### CATASTROPHIC DESATURATION OF LOADED PALLADIUM



**FIGURE 3 : QUALITATIVE COLD FUSION ANALYSIS** Output of a qualitative model used to test the response of an active medium capable of exothermic desaturation. The three curves are 1) the normalized deuteron fugacity; 2) the normalized local cathode temperature; and 3) the fractional saturation  $n(\bar{\Gamma}_D)$  for the isotopic fuel (deuterium) located within the active medium (palladium).

pressure in-situ by several thousands of atmospheres. A desaturation of only six additional d-uterons into a defect volume (compartment 2) of size equivalent to a unit lattice of the palladium would generate incremental fugacities (already quite extraordinary as based upon corrosion and electrochemical information) by an additional several thousand atmospheres. This alone, however, may be insufficient to overcome the coulomb barrier. On the gripping hand, however, the surface energy required to rupture the palladium prevents the escape, for a while, of the reactants while they continue to accumulate in compartment 2 by the catastrophic reactions and thereby maintain close contact for the desired reactions.

Positive feedback comes from the saturation-temperature relation and perhaps from the phonon-softened coupling. The active site (compartment 2) may be the very location toward which the intrapalladium deuteron flux may migrate secondarily to phonon mode softening occurring for some vacancies in some transition metals<sup>16</sup>. The temperature rise occurs as the acoustical and optical phonons become unable to carry off all the momentum and excess energy of the reactions. For times between  $\tau_{tc}$  and  $\tau_{te}$  (see figure 6), the CAM model suggests that internal conversion, by way of the plasmons and phonons, may contribute to the observed branching ratios by enabling deexcitations to couple with phonons, already produced during the CAM desaturation. The phonon modes, which are relatively slower and would therefore produce significantly longer transitional times. Coupled with movement of those phonons during that transitional time,

there would be adequate recruitment of lattice sites to account for significant energy transfer to the lattice.

### INTERPRETATION - DRIFT AND PHONONS

This sudden desaturation is a reasonable assumption because of the natural characteristics of palladium and its deuterium diffusivity which increases with temperature<sup>35</sup> and with characteristic increasing grain-boundary formation<sup>36,37</sup>; would form during such catastrophic changes. The transmission resonance theory<sup>38</sup> also noted that deuterons of specific momentum penetrate the metal as "diffusons".

As discussed elsewhere<sup>31</sup> defects, grain boundary dislocations, "zeolite"-like diffusion<sup>37</sup>, differences in phases<sup>34</sup>, and fissures may all influence deuterium diffusion in the palladium. But the phonon spectra themselves are also important. Deuterium migration is aided by phonons at lower temperatures<sup>39,40</sup>. This coupling also offers a pathway for phonon-assisted tunneling<sup>41</sup>. Further coupling of such optical phonon modes<sup>39</sup> to the lattice occurs through polarons<sup>42</sup>. Finally, the catastrophic deuterium flux will be followed by plasmons, for charge neutrality possibly akin to a type as previously discussed<sup>1</sup>.

There are two separate vibrational spectra which result from the small mass of the deuterium in the transition metal<sup>43</sup>. The deuterium vibrational modes are far above the lattice modes<sup>39,40</sup>. The phonon energies ( $\sim 32$ - $48$  milli eV for Pd)<sup>44</sup> have significant zero point motions<sup>42,43</sup> so therefore initially

the phonons are optical. Eventually even the acoustic phonons may contribute to the observed excess enthalpy.

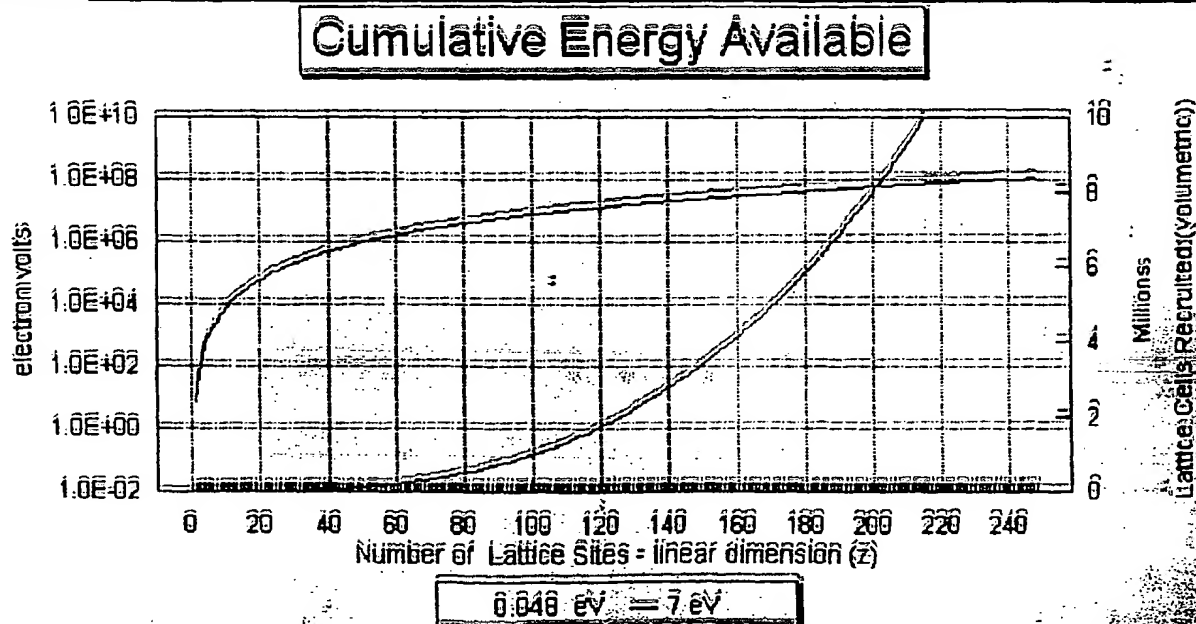
There exist additional sources of energy. Within the defect sites there may occur gas formation ( $D_2$ ) by way of deuterons to  $D_2$  gas that would also contribute energy for fusion<sup>45</sup>. The energy release per deuterium recombination is  $\sim 7$  eV or less, but the CAM hypothesis is based upon the volume desaturation surrounding a small compartment. Consideration of the available deuterium concentration reveals that a radius of only a small number of lattice lengths gives a quantity that may provide a requisite number of deuterons.

Figure 4 presents the results of analyzing how many lattice sites are required to provide energies consistent with fusion activation. On the x-axis are the number of lattice sites in direction  $z$ . The right y-axis provides the volume integral of that number. The result is shown for both 0.048 and 7.0 eV (the energies associated with single phonons and with the energy tied to deuterium recombination to diatomic deuterium).

### GENERATION OF THE FUSION REACTIONS

The CAM hypothesis includes the generation of significant phonons and moving interstitials within the palladium. The fusion reactions may be driven by those reactions and the optical phonon fields and moving interstitials.

**Figure 4 - Cumulative Energy Available** The twin curves show the cumulative energy available (or required) for a 48 millielectron volt and 7.0 electron volt system as a function of the number of lattice sites. The third curve is the volumetric correction for the actual number of sites available because of the three-dimensional nature of the lattice (right-hand y-axis).



There are many factors that contribute to possible fusion: electrical charging of the cathode to a high negative voltage, the deuteron band structure<sup>41</sup>, Bloch-symmetric Bose-Bloch condensates<sup>42</sup>, plasmon exchange<sup>43</sup>, electron screening<sup>44</sup>, the increased effective mass of the deuterons due to polarons<sup>45</sup>. There are many reactions to generate the observed excess enthalpies. These sources of heat include collisions, polaron formation and drift, both optical and acoustic phonon generations, lattice deformation and fracture, diatomic deuterium formation, and any potential fusion reactions.

One helpful aspect is the magnitude of  $Q_f$  which is the generated energy in the reaction<sup>4</sup> and which may result in further amplification of the phonon field. Not counting the equivalent mass of the photon, the energy released, based upon recent data<sup>30</sup>, this is 22.4 MeV. We now add the high local temperatures, local feedback, phonon-flux coupling, and confinement discussed in the CAM theory. Moreover, the lattice may directly enhance fusion because the diffusion flux of deuterons within the palladium may be proportional to the tunneling matrix element<sup>1</sup>. We also postulate that basal-plane shift secondary to shear stress along the tetragonal-plane-axis may play a role in bringing deuterons together for the fusion reactions, perhaps forming compartment 2 from the tetrahedral deuterons in that plane (figure 1). This is shown in figure 6. The fusion reactions, if generated, will supply significant local heat causing release of more deuterons.

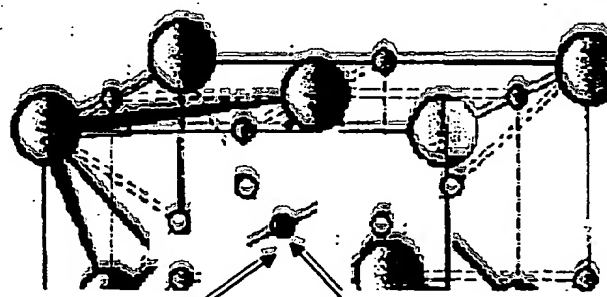
We are presently examining the reactions where some of the energy is coupled to the lattice through the CAM processes. Full analysis require statistical<sup>49</sup> and fractal methods<sup>50</sup>, with inclusion of polarons in octahedral and tetrahedral systems<sup>5</sup> and consideration of Anderson localization<sup>51</sup>, and phonon-electron interactions including anharmonicities<sup>52</sup>. The next section explores the possibility of accessory states involving interdeuteron electrons.

### INTRA-DIDEUTERON ( $\gamma$ -STATE) ELECTRONS

The interdeuteron pathway hypothesizes that there is an electron ( $\gamma$ -site) between the deuteron pairs in the fully filled, activated and electrically reduced palladium electrode. For this charge transfer, full loading ( $T_D$ ) would be only a *sine qua non* to the desired reactions. The  $\gamma$ -electron is shown in the next figure (Figure 5) which is a blowup of figure 1B, specifically showing the tetrahedral plane of four deuteron sites within the palladium lattice. We refer to this as the  $\gamma$ -state location, after the suggestion of this most-recently described phase by Johnson<sup>44</sup>.

We think this proceeds to fusion for several reasons. First, as Vigier has shown such a system could account, through

Figure 5 - Tetrahedral Plane with Interdeuteron  $\gamma$ -electron



inter-deuteron electron  
Direction of deuteron mass transfer and one possible direction for its wavefunction enabling coupling to the lattice.

tight orbits, to reduced intranuclear distances<sup>53</sup>. These result from spin-spin and spin-orbit couplings added to the usual Coulomb potential spin-spin and spin-orbit forces which permit new tight Bohr orbits with orbital energies of  $\sim 50\text{keV}$ . These neglected forces result from the interaction of the antiparallel proton-electron magnetic moments.

From the inter- $\beta$ -phase deideuteron electron state to the fusion with production of  $^4\text{He}$  would only occur with collapse of the system through the strong force as the linear momentum is conserved by internal conversion (phonon coupling to the lattice). Intermediate states facilitating the coupling may include those discussed above containing the bound states proposed by Vigier<sup>43</sup>.

Second, with the increased screening from the additional electron, further enhancement leading to the increased possibility for fusion would result. There exists the possibility of the requirement of a long-range coherent lattice for this electron to remain in stable fashion. The arrow in figure 5 shows the direction of momentum and possible wavefunction involvement. However, with long range periodicity, there would not only arise stability but coupling over many lattice sites. Only a few hundred would provide adequate numbers of phonon sites to account for the energy in the formation of  $^4\text{He}$  (figure 6).

Third, this reaction could further be driven by several reactions including anharmonic motion. Some portion of the reactions may even be coupled to recombination of the deuterons that yield 9.4 eV per atom. The anharmonic effects are driven by the Jahn-Teller displacement, which can also further enable the fusion reactions to proceed<sup>44</sup>. It may also be that such effect can also both couples to the phonons



and may be directly connected to the inter- $\beta$ -deuteron electron (IDE).

Yet another pathway which may apply is described by Bass where each deuteron of energy 11.4 eV entering a fully loaded Pd lattice will under certain condition produce an alpha particle<sup>18</sup>. A test of this hypothesis would include detection of the generated protons, phonons, and the helium generated coupled in time metachronously to the generation of the desired fusion reactions.

This catastrophic effect is also expected to play a significant role in the etiology of the cold fusion phenomena. The final transfer of charge to the inter- $\beta$ -deuteron site may play, with or without a requisite activation energy, the penultimate control of the desired reactions. However, as with mechanochemical effects, electrochemical effects, phonon-coupling, and other complexities, this is still being explored. In any case, the reactions described cannot continue indefinitely, but are limited by the structural integrity of the very material in which they occur.

### END OF THE CATASTROPHIC REACTIONS

In the CAM hypothesis it is the movement of deuterons to compartment 2 that begins the cold fusion process at that location. The reactions occur at select sites of the deuteron-loaded periodic palladium lattice driven by sudden local catastrophic fractional desaturation of deuterons. However, because no material can withstand an indefinite buildup, there comes a time when the internal pressures are able to exceed the energy needed<sup>56</sup> to create fresh new surfaces in the palladium.

The fusion of deuterium is hypothesized to continue until the crystalline palladium (the active medium because of its high fractional saturation and its exothermic desaturation tendency) is spent of its deuterons or until, by a second catastrophic process, the fusion-defect-site is no longer confined. Leakage now occurs and the sample becomes, at best, locally regionally inactive.

Fractofusion<sup>57</sup> hypothesizes that cracks create cold fusion by the high electric field generated across crystalline fractures. In contrast with the fractofusion theories, but consistent with theories of adhesion and surface energy requirements<sup>58</sup> for generating new surfaces in a material, the CAM theory hypothesizes that the desired reactions end with the production of the cracks which absorb, rather than create, the activation energy for any fusion reactions.

What is not determined yet is of what magnitude the peak temperature gets in the model. Inclusion of energy transfer to

### Dynamic Inversion of $F_D(t)$ , $\Theta_{PD}(t)$ and Temperature

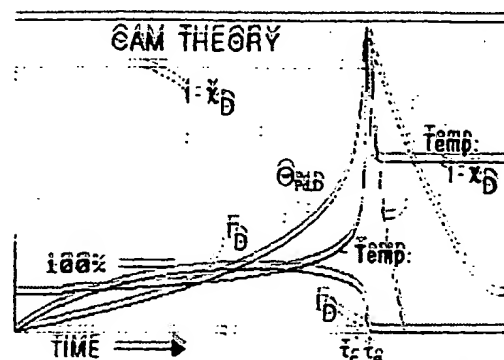


FIGURE 6- CAM MODEL OF BURST AND METALLURGICAL CATASTROPHIC BEHAVIOR

This figure shows several curves representing a hypothetical successful cold fusion burst. The loading is shown to first rise continuously based upon the fractional saturation of the deuteron sites ( $F_D$ ). At some time just after  $\tau_c$  the catastrophic reaction occurs and the fugacity ( $\Theta_{PD}$ ) rises with the temperature lagging but then going critical. This continues until there are catastrophic changes in the material ( $\chi_D$  approaches 1) and there is outgassing, loss of saturation, and ultimate fall off of temperature. The second catastrophic change to the system (formation of compartment 3) begins at  $\tau_e$ .

the surroundings, including the ambient and solution, the possibility of further phase changes including the ( $\gamma$ -phase) in the electrode, and even possible mass transfer from the simple compartments, must be considered. Furthermore, material heterogeneity and phase change (with the possibility of cooperative phenomena) must be included. As one example of the complex coupling, as the loading drops below  $F_D \approx 0.8$  the lattice will absorb energy produced limiting the temperature rise.

### CORRELATION WITH OBSERVATIONS

The CAM hypothesis must be tested against the findings reported. Full, or near-full, loading of palladium with isotopic fuel appears to be the requisite = but insufficient by itself = of the CAM model, and this is consistent with most reports to date. Some of the expected hypothesized findings of the CAM model appear to be consistent with actual metallurgical examination of those electrodes that have exhibited successful excess heat reactions following full deuteron loading. Irregular volumes, consistent with compartment 3 do appear. In fact, surface cracks, increased intragranular roughness, "alpine" features<sup>59</sup>, pitting<sup>60</sup> and other

significant morphologic changes all occur. Four probe resistance measurements indicate the development of subsurface cracks following deuterium loading<sup>77</sup> further corroborating this. Such changes could be consistent with the development of compartments 2 and especially 3.

The CAM hypothesis may also be consistent with the fact that the increases in the volume for better performing cold fusion palladium samples are less, corresponding to the CAM suggestion that compartment 3 effectively terminates the favorable reactions.

The CAM hypothesis is also consistent with corrosion theory<sup>23</sup> because hydrogen diffusion is known to be both intermittent and characterized by flow towards imperfections.

The intracathodic compartment 3 could be similar to the better-known endstage hydrogen embrittlement, which declares itself when the hydrogen explodes into the ambient as the metal fissures or otherwise irrefutably changes of shape. The calculated fugacities involved are enormous<sup>22,23,60</sup> also consistent with the CAM theory.

The CAM model suggests why temperature cycling of deuterided palladium and titanium<sup>61,62</sup> may initiate excess power. Such temperature change may alter the deuterium saturation directly, or by secondary changes in the metal volume, its specific heat, or by a phase change therein.

The catastrophic nature might also explain the relative uncontrollability of the processes at this time.

The CAM hypothesis may be consistent with the inhomogeneous "footprints" of reactions seen upon cold fusion cathodes by x-ray film<sup>61</sup>. This may be because of the catastrophic, hence sporadic, nature of the CAM effect.

Theoretically, the CAM hypothesis may be consistent with reports of packed hydrogen atoms observed at vacancies [e.g., up to six], and theories of three- (or other multi-) body, reaction(s)<sup>64,65</sup> that could occur in compartment 2.

## SUMMARY

The catastrophic active medium (CAM) theory of cold fusion is hypothesized to occur at certain vacancies and defects by the sudden fractional desaturation of deuterons. Catastrophic deuterium flux, coupled in positive feedback with a further exothermic deuterium desaturation of the active medium, and possible optical phonon mode-softening towards the defect, drives the system until, by a second catastrophic process, the fusion-defect-site is no longer confined (figure 5). The defect site may enable confinement,

and possibly focusing, enabling novel reactions. Coupling of the deuterium flux to the lattice through optical and acoustic phonons and secondary polarons and plasmons may also provide fusion-lattice coupling.

The CAM hypothesis may offer explanations for the tremendous "difficulties" observed by many experimenters attempting to repeat experiments; for the bursts of excess energy seen; and for the very tardive appearances of the excess energy.

## TABLE OF VARIABLES

A	area [ $\text{cm}^2$ ]
$D_0$	diffusivity of deuterons [ $\frac{\text{cm}^2}{\text{sec}}$ ]
$[D]$	deuteron concentration [ $\text{cm}^{-3}$ ]
$[D]_e$	deuteron concentration in the electrode
$[D]_{\text{tot}, \text{int}}$	initial quantity of deuterons
$[D]_{\text{tot}, \text{el}}$	total quantity of deuterons in electrode
$[D]_{\text{tot}, \text{cl}}$	total quantity of deuterons in closed system
$[D]_{\text{di}}$	diatomic deuterium in palladium
$D^+$	$\equiv \frac{1}{2}H^+ \equiv$ deuteron
$D_2$	diatomic deuterium
$D_{\text{ad}}$	atomic deuterons at electrode interface
E	electric field intensity
F	the Faraday
$\frac{h}{2\pi}\omega$ (Energy)	photon with energy in bracket
$H^+$	proton
$\frac{1}{2}He^{++}$	first excited state of helium-4
i	electrical current
$J_e$	flux of deuterons entering Pd cathode [ $\frac{1}{\text{cm}^2 \cdot \text{sec}}$ ] [**]
$J_f$	deuterons in fusion reaction(s) [ $\frac{1}{\text{cm}^3 \cdot \text{sec}}$ ]
$J_g$	flux of deuterons evolving to gas [ $\frac{1}{\text{cm}^2 \cdot \text{sec}}$ ]
$k_B$	Boltzmann constant
$K_{\text{eq}}$	Equilibrium constant between $D_{\text{ad}}$ and $D_2$
L	length [ $\text{cm}$ ]
$L_z$	Length of cell in quasi-1-dimensional model
n	neutron
$N_0$	average volumetric loading ratio
[Pd]	concentration of palladium
$P_{\text{ext}}$	$D_2$ partial pressure external to palladium
q	electric charge
T	absolute temperature
W	Width of cathode in Q1D model

$z$  distance variable  
 $\sigma_0$  activity coefficient  
 $f_{A,0}$  ratio of fugacity to pressure (at equilibrium)  
 $x_0$  fractional volume of compartments 2 & 3  
 $\delta_s$  Sievert coefficient  
 $\Phi$  the potential  
 $\Theta_{D,M}$  deuteron fugacity within the metal  
 $\Gamma_0$  average fractional saturation of lattice  
 $\Gamma_{D,M}(z, \Theta_{D,M}, P_{D,ext})$  continuum occupancy parameter  
 $\eta_0$  electrical transference  
 $\lambda_{A,0}$  flux loading/gas evolution ratio  
 $\mu_0$  electrophoretic mobility  $\left[ \frac{cm^2}{volt-sec} \right]$   
 $\Xi_{0,j}$  density of lattice sites of  $j$ -th type  $[cm^{-3}]$   
 $\Xi_0$  total density of lattice sites  
 $\Psi_{A,0}$  fraction of deuterons contributing to fusion reactions  
 $\xi$  electric order/thermal disorder ratio

[\*]  $\lambda_0, x_0, \Gamma_0, \lambda_{A,0}, \Psi_{A,0}$  and  $\xi$  are non-dimensional parameters.

[\*\*] Modified from the previous quasi-1-dimensional analyses to correct for the volumetric information of the CAM model.

## ACKNOWLEDGMENTS

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$z$  distance variable

$\alpha_0$  activity coefficient

$\beta_{\text{AD}}$  ratio of fugacity to pressure (at equilibrium)

$\bar{x}_0$  fractional volume of compartments 2 & 3

$\delta_i$  Sievert coefficient

$\phi$  the potential

$\Theta_{\text{D,Pd}}$  deuteron fugacity within the metal

$\Gamma_0$  average fractional saturation of lattice

$\Gamma_{\text{D,Pd}}(z, \Theta_{\text{D,Pd}}, P_{\text{D,EXT}})$  continuum occupancy parameter

$\eta_0$  electrical transference

$\lambda_{\text{AD}}$  flux loading/gas evolution ratio

$\mu_0$  electrophoretic mobility  $\left[ \frac{\text{cm}^2}{\text{volt-sec}} \right]$

$\Xi_j$  density of lattice sites of  $j$ -th type  $[\text{cm}^{-3}]$

$\Xi_0$  total density of lattice sites

$\Psi_{\text{AD}}$  fraction of deuterons contributing to fusion reactions

$\xi$  electric order/thermal disorder ratio

[\*]  $N_0, \bar{x}_0, \Gamma_0, \lambda_{\text{AD}}, \Psi_{\text{AD}}$  and  $\xi$  are non-dimensional parameters.

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# ISOTOPIC FUEL LOADING COUPLED TO REACTIONS AT AN ELECTRODE

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## ABSTRACT

The quasi-one-dimensional (Q1D) model for an electrode filled by an isotopic fuel offers insight into both competitive gas-evolving reactions at the surfaces of the electrode and the impact of the ratio of the applied electric field energy to thermal energy [ $k_B \cdot T$ ]. The latter appears decisive in controlling the loading. The Q1D model develops a solution separable into components determined by three non-dimensional factors,  $\lambda_{Pd,D}$ , the loading flux ratio,  $\Psi_{fus}$ , the fractional amount of intrapalladium deuterons that actually contribute to the desired reactions, and  $\xi$ , the electric order/thermal disorder ratio. The derived fusion flux equation links the deuteron loading flux from the solution into the metal and gas evolving reactions to potential reactions at that site.

## INTRODUCTION

Classical calculations of the activities of an ionic electrolyte<sup>1,2</sup> next to a metal electrode have been applied to cold fusion reactions following loading of isotopic fuel into a metal<sup>3</sup> and have been used to derive the distributions of deuterium in the palladium<sup>4</sup> and the solution<sup>5,6</sup>. However one premise is that the systems are at equilibrium, and that may not be true<sup>7</sup>. Therefore, a quasi-one-dimensional model for an electrode filled by the isotopic fuel was formulated<sup>1</sup>. The Q1D model offers insight into the processes because it indicates how both competitive gas evolving reactions at the metal electrode surface and the ratio of the applied electric field energy to thermal energy [ $k_B \cdot T$ ] are decisive in controlling the loading of the metal by the deuterium<sup>1</sup>. We now extend that model and correct the derived fusion equation<sup>1</sup> that links the deuteron loading flux from the solution into the metal for potential reactions at that site.

Figure 1 shows the four regions of the electrochemical cold fusion cell. Within the heavy water solution, most deuterons are tightly bound to oxygen

atoms. The power source generates the applied electric field intensity. The induced drift by the applied electric field is shown schematically in the figure which does not mean that the deuterons travel in such a simple fashion<sup>8,9</sup>. The electric field distribution is altered as the solution and system each respond with complex conduction and polarization phenomena<sup>10,11,12</sup>. Ionic drift, secondary space charge polarization, propagation of solvated deuterons, deuterons in clathrates, and L-D-deuteron defects with their ferroelectric inscription in the heavy water<sup>11</sup>, and the formation low dielectric constant bubbles abutting the cathode are the minimum expected<sup>12</sup>. The double layer between the solution and the metal is created both by the cathode fall of ions and other polarization reactions.<sup>1,2,9</sup>

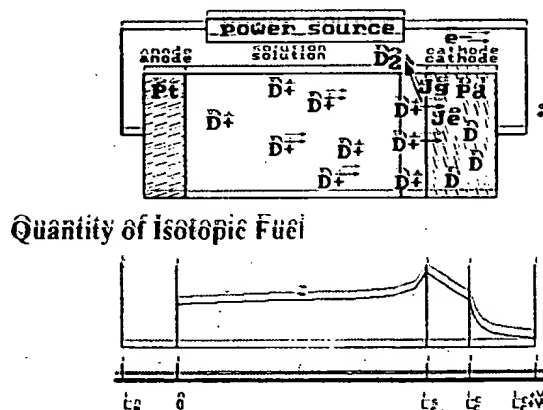


FIGURE 1 -- Q1D MODEL OF LOADING

The applied electric field influences the spatial distribution of deuterons in aqueous solution. There are four compartments considered outside of the material (palladium electrode in this case) to be loaded with the isotopic fuel. The first is the anode. The induced drift in the second compartment (heavy water) by the initial applied electric field is schematically shown. There is a double layer region, the "width" of which is greatly exaggerated in the figure. The last compartment is the cathode. The gas volume outside of the material loaded with the isotopic fuel is not shown in the lower curve.

Without significant convection, the flux ( $J_i$ ) of any  $i$  species (here deuterons) results from diffusion down concentration gradients and electrophoretic drift<sup>3,7,10</sup>:

$$J_D = -\bar{B}_D * \frac{d\bar{D}(z,t)}{dz} = \mu_D * [\bar{D}(z,t)] * \frac{d\Phi}{dz} \quad (\text{eq.1})$$

Three components of the deuteron flux must be considered at the cathode. The first flux component is the entry of deuterons into the bulk of palladium ( $J_e$ ). The second flux component is the loss of deuterons secondary to gas evolution ( $J_g$ ). The third flux component is caused by those deuterons lost to any putative fusion reactions, and is represented as  $J_{fus}$ .  $J_{fus}$  is assumed to be 0 in the bulk solution. The mathematical solution for the time rate of change of the deuterium in any given volume is determined by these fluxes and Gauss' Theorem<sup>5</sup>:

Deuteron entry to the cathode is electron limited with all entry occurring at the cathode-double layer interface. At this boundary intermolecular deuteron transfer from the solution to octahedral sites within the palladium may control the loading<sup>9</sup>. Within the metal, the deuteron diffusion has been considered by several models<sup>3,4,11</sup>. Optical and acoustic phonon spectra<sup>12</sup>, material defects, grain boundary dislocations, "zeolite"-like diffusion<sup>4</sup> and fissures all may influence the deeper loading of the metal.

### CRITICAL LOADING FLUX

The Q1D model links the deuteron flux from the solution into the pericathodic volume, and includes flux both into the metal, gas evolution, and any potential fusion reactions.

$$\begin{aligned} \frac{d\bar{D}(z,t)}{dt} = & \left( \bar{B}_D * \frac{d^2\bar{D}(z,t)}{dz^2} \right) + \left( \mu_D * \bar{D}(z,t) * \frac{d^2\Phi}{dz^2} \right) + \\ & \left( \mu_D * \frac{d\Phi}{dz} * \frac{d\bar{D}(z,t)}{dz} \right) + \left( \frac{d\bar{D}(z,t)}{dz} * \frac{d\bar{B}_D}{dz} \right) + \\ & \left( [\bar{D}(z,t)] * \frac{d\Phi}{dz} * \frac{d\mu_D}{dz} \right) = \frac{d}{dz} [\Sigma J_i] \quad (\text{eq.2}) \end{aligned}$$

The mathematical solution of equation 2 is determined both by the boundary conditions and by conservation of mass. There is assumed conservation of deuterons with the exception of a loss ( $J_{fus}$ ) to all putative fusion reactions.  $J_{fus}$  is extremely small compared to

most loading rates of gas evolving reactions<sup>5</sup>. As previously discussed<sup>5</sup>, examination of the solution indicates that the deuteron loading rate into the electrode is critically linked to gas evolution and is also first order on  $\mu_D * \bar{E}$ :

$$\kappa_e = (\mu_D * \bar{E}) = (\kappa_g + \kappa_{fus}) \quad (\text{eq.3})$$

This loading rate equation relates deuteron availability (secondary to the applied electric field) to the losses of deuterons to both gas evolution and the fusion reactions. One simple but important corollary is that the evolution of  $D_2$  gas and deuteron loading to the palladium cathode are mutually exclusive for any given applied electric field.

### DEUTERONS CONTRIBUTING ( $\Psi_{fus}$ )

In a successful cold fusion system  $J_{fus}$  is not zero. Therefore the non-dimensional parameter,  $\Psi_{fus}$ , is defined as the fractional amount of intrapalladium deuterons which actually contribute to the desired reactions. When the filling of the palladium with deuterium is complete in the steady state,  $J_e$  would be about  $J_{fus}$ <sup>5</sup>. This fusion rate equation can be examined for its relation to thermal processes by substitution using additional non-dimensional parameters and the Einstein relation:

$$\frac{\bar{B}_D}{\mu_D} = \frac{k_B * T}{q} \quad (\text{eq.4})$$

### THE LOADING RATIO ( $\lambda_{Pd,D}$ )

The non-dimensional parameter  $\lambda_{Pd,D}$  is defined as the ratio of the two largest and most important pericathodic fluxes; the loading flux ( $J_e$ ) to the gas evolution ( $J_g$ ). It is very much a function of the isotope and the material, hence the paired subscript.

$$\lambda_{Pd,D} = \frac{J_e}{J_g} \quad (\text{eq.5})$$

Thus if  $\lambda_{Pd,D}$  is .01, most of the current is going to gas electrolysis, whereas  $\lambda_{Pd,D} = 100$  would indicate more efficient loading.

Use of the transsample voltage and  $\lambda_{Pd,D}$  as the loading factor and the Einstein relation yield the fusion flux:

$$J_{fus} = \frac{2\lambda_{Pd,D}}{2\lambda_{Pd,D}+1} * \left[ \frac{B_D * [D]_i}{L_c} \right] * \left\{ \frac{1}{1 - \exp\left(\frac{-qV}{k_B T}\right)} \right\} * \left[ \frac{(qV)^2}{(k_B T)^2} \right] * \Psi_{fus} \quad (eq.6)$$

This fusion flux equation (equation 7) contains five terms after separation of variables. The first term results from gas evolution. The second term is composed of geometric and material factors. The next two terms reflect the applied electric field intensity and  $k_B T$  and are dominated by the ratio of the applied electrical energy that is organizing the deuterons to the energy causing their random thermal disorganization. The final term,  $\Psi_{fus}$ , is the fraction of deuterons that partake in any potential fusion process(es).

#### ELECTRIC ORDER/THERMAL DISORDER RATIO ( $\xi$ )

Introducing  $\xi$ , the electric order/thermal disorder ratio, then simplifies this fusion flux equation:

$$J_{fus} = \left\{ \frac{B_D * D(z,t)}{L_c * [1 + (2 * \lambda_{Pd,D})^{-1}]} \right\} * \left\{ \frac{\xi^2}{(1 - \exp(-\xi))} \right\} * \Psi_{fus} \quad (eq.7)$$

This relationship is demonstrated in Figures 2 and 3 which show the impact. In figure 2, for simplicity,  $J_{fus}$  is assumed to be 0. The loading flux of deuterons into the palladium at the cathode surface ( $J_2$ ) is shown as a function of the electric field intensity, for various rates of gas  $[D_2]$  evolution rates ( $J_1$ ).

The series of parametric curves indicates how the loading rates are sensitively dependent both upon the electric field energy as well as the competing gas

evolving reactions. Examination of equation 7 indicates that although  $\lambda_{Pd,D}$  has major effects for every  $\xi$ , however, that importance requires a level of  $\lambda_{Pd,D} \approx 1$  to plateau its importance as is shown in figure 3:

#### RELATIVE RATE OF DEUTERONS ENTERING PALLADIUM

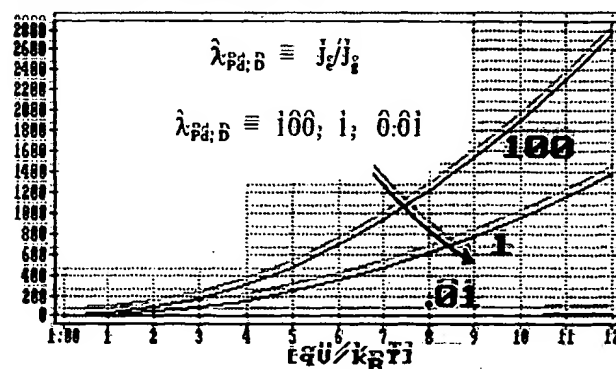


FIGURE 2 - LOADING RATE OF PALLADIUM

The relative value for the loading flux ( $J_2$ ) is shown as a function of the electric field intensity. These curves are shown as a function of  $\xi$ , the electric order/thermal disorder ratio. This is shown parametrically for various rates of gas  $[D_2]$  evolution rates at the cathode (characterized as  $J_1$ ). In this example,  $J_{fus}$  is zero.

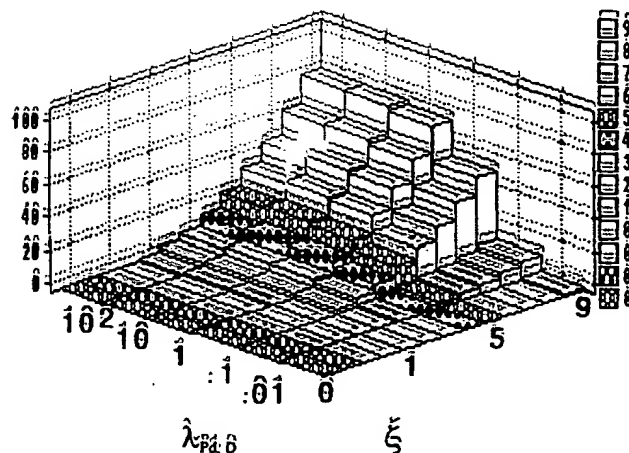


FIGURE 3 - Q1D FUSION FLUX

This 3-D parametric graph represents a closer examination of the fusion flux equation based upon the two parameters:  $\xi$  and  $\lambda_{Pd,D}$ :  $\Psi_{fus} = 1$ .

## SUMMARY

The quasi-one-dimensional (Q1D) model of isotopic fuel loading has been modified using three non-dimensional factors,  $\lambda_{Pd,D}$  the loading flux ratio,  $\Psi_{fus}$  the fractional amount of intrapalladium deuterons that contribute to the desired reactions, and  $\xi$  the electric order/thermal disorder ratio. In addition, the putative fusion rate term has been corrected to now include only those deuterons contributing to the desired reactions.

## ACKNOWLEDGMENTS

The author thanks Profs. P. Hagelstein, M. Zahn, Dr. S. Baer and G. Verner for their helpful comments and suggestions towards the development of this model.

## TABLE OF VARIABLES

$D$	diffusivity $\left[ \frac{cm^2}{sec} \right]$	$q$	electric charge
$[D]$	deuteron concentration	$T$	temperature
$[D]_0$	initial deuteron concentration	$\Phi$	the potential
$E$	electric field intensity	$K_f$	fusion rate
$K_g$	gas evolution rate	$K_e$	entry rate
$J_e$	deuterons entering cathode	$\lambda_{Pd,D}$	loading ratio
$J_g$	deuterons evolving to gas	$\mu_D$	electrophoretic mobility
$J_f$	deuterons in fusion reactions	$k_B$	Boltzmann constant
$\Psi_{fus}$	deuterons involved	$L_c$	length (to cathode)
$\xi$	electrical order/thermal disorder ratio		

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**Defense Threat Reduction Agency**  
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Fort Belvoir, VA 22060-6201

SEP 28 2011

Case Number: 11-088

Mr. Steve Krivit  
369-B Third Street Suite 556  
San Rafael, CA 94901

Dear Mr. Krivit:

This is the final response to your Freedom of Information Act (FOIA) request dated May 28, 2011, and received in this office May 31, 2011. You requested copy of the transcript of the Dec. 12, 2006 DTRA/ASCO High Energy Science and Technology Workshop in Ft. Belvoir, Virginia.

Enclosed is a copy of above requested document. Some information is exempt from disclosure under FOIA Exemption 3 of Title 5 U.S.C. § 552. FOIA Exemption 3 applies to information specifically exempted by a statute establishing particular criteria for withholding. The underlying statute applied is: 10 USC 128 – Authority to Withhold Unclassified Special Nuclear Weapons Information.

Exemption 6 applies to information of a personal nature such as names, medical information, or other personal information which, if disclosed, would result in a clearly unwarranted invasion of personal privacy of the individual.

All determinations are made on behalf of the Director of DTRA Public Affairs, the Initial Denial Authority. If you consider this to be an adverse determination, you may file a written appeal that is postmarked no later than 60 calendar days after the date of this letter to the Deputy Director, DTRA. The appeal should reference FOIA case number, contain a concise statement of the grounds upon which the appeal is brought and a description of the relief sought. A copy of this letter should also accompany your appeal. Both the envelope and your letter should clearly identify that a Freedom of Information Act Appeal is being made.

No fees are due as the assessable costs total \$25.00 or less. If you need further assistance regarding this request, contact the FOIA action officer, Abraham Blakeley, at (703) 767-1772, or the requester service center at (703) 767-1792.

Sincerely,

A handwritten signature in cursive script that reads "Juanita Y. Gaines". The signature is written in dark ink and is positioned above the printed name and title.

Juanita Y. Gaines  
Acting Chief, Freedom of Information/  
Privacy Act Branch

Enclosures:  
As stated



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Defense Intelligence Agency

***Defense Analysis Report***

DIA-08-0911-003

13 November 2009

**Technology Forecast: Worldwide Research on Low-Energy Nuclear Reactions Increasing and Gaining Acceptance**

*Scientists worldwide have been quietly investigating low-energy nuclear reactions (LENR) for the past 20 years. Researchers in this controversial field are now claiming paradigm-shifting results, including generation of large amounts of excess heat, nuclear activity and transmutation of elements.<sup>1,2,3</sup> Although no current theory exists to explain all the reported phenomena, some scientists now believe quantum-level nuclear reactions may be occurring. DIA assesses with high confidence that if LENR can produce nuclear-origin energy at room temperatures, this disruptive technology could revolutionize energy production and storage, since nuclear reactions release millions of times more energy per unit mass than do any known chemical fuel.<sup>4,5</sup>*

**Background**

In 1989, Martin Fleischmann and Stanley Pons announced that their electrochemical experiments had produced excess energy under standard temperature and pressure conditions.<sup>6</sup> Because they could not explain this physical phenomenon based on known chemical reactions, they suggested the excess heat could be nuclear in origin. However, their experiments did not show the radiation or radioactivity expected from a nuclear reaction. Many researchers attempted to replicate the results and failed. As a result, the physics community disparaged their work as lacking credibility, and the press mistakenly dubbed it "cold fusion." Related research also suffered from the negative publicity of cold fusion for the past 20 years, but many scientists believed something important was occurring and continued their research with little or no visibility. For years, scientists were intrigued by the possibility of producing large amounts of clean energy through LENR, and now this research has begun to be accepted in the scientific community as reproducible and legitimate.

**Source Summary Statement**

This assessment is based on analysis of a wide body of intelligence reporting, most of which is open source information including scientific briefings, peer-reviewed technical journals, international scientific conference proceedings, interviews with scientific experts and technical media. While there is little classified data on this topic due to the S&T nature of the information and the lack of collection, DIA judges that these open sources generally provide the most reliable intelligence available on this topic. The information in this report has been corroborated and reviewed by U.S. technology experts who are familiar with the data and the international scientists involved in this work.

Although much skepticism remains, LENR programs are receiving increased support worldwide, including state sponsorship and funding from major corporations.<sup>7,8,9,10</sup> DIA assesses that Japan and Italy are leaders in the field, although Russia, China, Israel, and India<sup>11</sup> are devoting significant resources to this work in the hope of finding a new clean

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energy source. Scientists worldwide have been reporting anomalous excess heat production, as well as evidence of nuclear particles<sup>12, 13, 14</sup> and transmutation.<sup>15, 16, 17</sup>

- Y. Iwamura<sup>18</sup> at Japan's Mitsubishi Heavy Industries first detected transmutation of elements when permeating deuterium through palladium metal in 2002.
- Researchers led by Y. Arata at Osaka University in Japan<sup>19</sup> and a team led by V. Violante at ENEA in Italy (the Italian National Agency for New Technologies, Energy, and the Environment—the equivalent to the U.S. Department of Energy)<sup>20</sup> also made transmutation claims.
- Additional indications of transmutation have been reported in China, Russia, France, Ukraine, and the United States.<sup>21, 22</sup>
- Researchers in Japan, Italy, Israel, and the United States have all reported detecting evidence of nuclear particle emissions.<sup>23, 24</sup>
- Chinese researchers described LENR experiments in 1991 that generated so much heat that they caused an explosion that was not believed to be chemical in origin.<sup>25</sup>
- Japanese, French, and U.S. scientists also have reported rapid, high-energy LENR releases leading to laboratory explosions, according to scientific journal articles from 1992 to 2009.<sup>26, 27</sup>
- Israeli scientists reported in 2008 that they have applied pulsating electrical currents to their LENR experiments to increase the excess energy production.<sup>28</sup>
- As of January 2008, India was reportedly considering restarting its LENR program after 14 years of dormancy.<sup>29</sup>

U.S. LENR researchers also have reported results that support the phenomena of anomalous heat, nuclear particle production, and transmutation.<sup>30, 31, 32</sup>

- At the March 2009 American Chemical Society annual meeting, researchers at U.S. Navy SPAWAR Pacific reported excess energy,<sup>33</sup> nuclear particles,<sup>34</sup> and transmutation,<sup>35, 36</sup> stating that these effects were probably the result of nuclear reactions.<sup>37</sup>
- A research team at the U.S. company SRI International has been studying the electrochemistry and kinetics of LENR since the early 1990's, reporting excess heat and helium production.<sup>38</sup>

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- In May 2002, researchers at JET Thermal in Massachusetts reported excess heat and optimal operating points for LENR manifolds.<sup>39</sup>
- Researchers at the China Lake Naval Air Warfare Center in California first reported anomalous power correlated with Helium-4 production in 1996.<sup>40</sup>

Although no one theory currently exists to explain all the observed LENR phenomena, some scientists now believe these nuclear reactions may be small-scale deuterium fusion occurring in a palladium metal lattice.<sup>41, 42, 43</sup> Some others still believe the heat evolution can be explained by non-nuclear means. Another possibility is that LENR may involve an intricate combination of fusion and fission triggered by unique chemical and physical configurations on a nanoscale level.<sup>44, 45</sup> **This body of research has produced evidence that nuclear reactions may be occurring under conditions not previously believed possible.** Recent results suggest these anomalous LENR phenomena can be triggered by various energetic stimuli (electric and magnetic fields, acoustic waves, infrared, lasers)<sup>46</sup> and may have a variety of operational modes.<sup>47</sup>

#### Nuclear Fusion

Nuclear fusion as currently understood occurs only in the core of stars, in nuclear weapons, in high temperature plasmas, or in inertially confined high-energy collisions. Scientists for years have attempted to harness nuclear fusion through high-temperature plasma techniques but have been unable to produce more energy output than supplied. Fusion was once thought to be the answer to the world's future clean energy needs, but after 60 years of research still has yet to live up to this promise. "Hot" fusion researchers do not believe fusion can occur at near-room temperatures based on the Coulomb barrier that repels like nuclear charges and have dismissed much of the "cold fusion" research conducted since 1989. As a result, such research has received limited funding and support over the past 20 years.

#### Potential Applications of LENR: The Technology Surprise Factor

LENR's potential as a future clean energy source is still unknown. However, recent results indicating nuclear activity and transmutation are intriguing and pose the following questions:

- If the excess heat from these experiments could be captured and intensified, could LENR be used as a power source for engines, batteries, or other equipment?
- If nuclear particles could be generated and transmute elements, could LENR be used to mitigate hazardous waste or to neutralize weapons of mass destruction?<sup>48</sup>
- If the various modes of energy production could be identified and optimized, could LENR be used to create designer materials or critical resources that are in short supply or serve as a tailored, "dial-a-mode" power source?

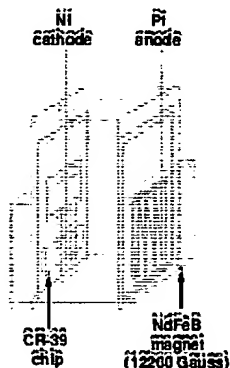
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- If rapid, explosive energy output can occur in one or several modes, could LENR serve as a new high-energy-density explosive?

International LENR research was highlighted in April 2009 on a U.S. television program focused on the 20th anniversary of the Fleischman and Pons announcement.<sup>49</sup> Many U.S. researchers are collaborating with foreign scientists, but each team has proprietary aspects of their experiments that are not shared. Because some peer-reviewed journals are reluctant to review or publish LENR data due to past controversies, most results are presented at international conferences, and foreign scientists have access to much of the U.S. data. In addition, U.S. experts have been invited to brief on LENR to nuclear institutes in India,<sup>50</sup> Belgium,<sup>51</sup> and South Korea,<sup>52</sup> and a reciprocal visit by South Koreans to SPAWAR Pacific to initiate collaboration is planned. This relatively free flow of information increases the likelihood of a technology breakthrough—as well as the potential for technology surprise—by an international team, especially those from countries that are devoting more resources to this research than is the United States, and are supported with major corporate funding (Mitsubishi, Toyota, and Honda in Japan; Pirelli in Italy).<sup>53</sup>

### The Experiments

Most LENR experiments involve electrodes immersed in solutions of metal salts such as lithium chloride or lithium sulfate, with heavy water substituted for natural water. Electric current is sent through the experimental apparatus, in most instances producing excess heat. This effect occurs over long periods (several hundreds of hours), and many early experimenters achieved negative results because they were unaware of this incubation period. Israeli researchers used pulsating electric fields to increase heat production. The application of magnetic fields has been shown to stimulate increased heat and power. Usually one of the electrodes is palladium, because it has a high ability to adsorb (hold on the surface) and absorb deuterium atoms in its metal matrix. Deuterium is an isotope of hydrogen that undergoes fusion in nuclear weapons at high temperatures and pressures; it also undergoes fusion and is one of the basic building blocks of the heavier elements formed in stars. The Navy SPAWAR experiments used a unique technique to place the palladium atoms in the heavy-water solution and to codeposit palladium and deuterium, which rapidly increases the deuterium "loading" necessary for the LENR phenomena to occur.



A Notional LENR Electrochemical Cell (Left) and a French LENR Apparatus After an Unexplained Explosion (Right)<sup>54</sup>

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## Who's Hot in Cold Fusion?

The countries with the most advanced LENR programs are Japan, Italy, and Israel. In addition, Russia, France, China, South Korea, and India are spending significant resources on LENR research. The following are among the most notable efforts:

- In Japan, Iwamura at Mitsubishi has been studying transmutation of elements in LENR experiments and multilayer palladium (Pd) complexes. His team includes the Japanese Synchrotron Radiation Research Institute and SPring-8 at Riken. Kitamura and other researchers at Kobe University are investigating Pd nanopowders and Helium-4 ash. Arata at Mitsubishi Heavy Industries has worked on catalysts containing nanopalladium. Yamaguchi at Kobe noted transmutation using multilayered Pd samples. Mizuno at Hokkaido is studying transmutations and heat generation. A team led by Hioki at Toyota is investigating deuterium gas permeation through Pd as well as transmutations. Toriyabe at Tohoku University is developing charged-particle detectors for LENR. Kasagi is looking at electron and ionic screening in LENR effects.
- Vittorio Violante, a leader in the field of Pd metallurgy and the role of surface effects in LENR, heads a team at ENEA, Frascati Rome, (the Italian equivalent to the U.S. Department of Energy) performing LENR experiments. A team led by Francesco Celani at INFN that includes STMicroelectronics and Pirelli labs is studying deuterium migration in nano-coated Pd for fast-loading and anomalous heat effects. The Italian Physical and Chemical Societies are supporting LENR research in Italy.
- Srinivasan in India noted that India is restarting its LENR program: the Bhabha Atomic Research Centre had several groups working on LENR from 1989 to the early 1990s. Sinha at IISc in Bangalore is studying models for fusion in metal deuterides. Lakshminan at Saveetha College is exploring fusion in sodium metal solutions.
- Andrei Lipson and other researchers at the Russian Academy of Sciences and scientists in Tomsk are studying the emission of charged particles during the use of electron beams to excite palladium/deuterium (Pd/D) and titanium/deuterium (Ti/D) targets. Karabut and others at LUCH also are conducting LENR experiments. A Dubna team led by Gareev is studying nuclear fusion during cavitation and molecular transitions. LUCH's Savvatimova, Dash, Muromtsev, and Artamonov also are conducting LENR experiments. Adamenko and Vysotskii of Kiev are looking for magnetic monopoles in LENR experiments. Kurchatov-based scientist Goryachev is investigating LENR for alternative energy sources and for mitigating radioactive waste.
- Xing Z. Li at Tsinghua University claims 20 institutions in China are investigating LENR with governmental support. Tian's team at Canghai University of Science and Technology is investigating laser triggering in Pd/D systems. Zhang and other researchers at the Chinese Academy of Sciences have studied Pd-D kinetics in LENR since 1991.
- Israeli scientists at Energetics in Omer have shown that variations in energy output can be increased using variable frequency or pulsed "superwaves" to stimulate LENR effects.
- The French Atomic Energy Agency had an official LENR program from 1997 to 1999. EDF also had one for several years. Currently, Jean-Paul Biberian from the Université Marseille and Jacques Dufour at CNAM are working on LENR in France.
- Jan Marwan of Dr. Marwan Chemie in Berlin, Germany, is studying the nanostructure of palladium hydride systems. Hüke and others from the Technische Universität Berlin are working with Czerski in Poland and Ruprecht in Canada on electron screening mechanisms for deuterium fusion.

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## Outlook and Implications

If nuclear reactions in LENR experiments are real and controllable, DIA assesses that whoever produces the first commercialized LENR power source could revolutionize energy production and storage for the future. The potential applications of this phenomenon, if commercialized, are unlimited. The anomalous LENR effects seen in these metal lattices containing deuterium may also have as-yet undetermined nanotechnology implications. LENR could serve as a power source for batteries that could last for decades, providing power for electricity, sensors, military operations, and other applications in remote areas, including space. LENR could also have medical applications for disease treatment, pacemakers, or other equipment. Because nuclear fusion releases **10 million times more energy per unit mass** than does liquid transportation fuel, the military potential of such high-energy-density power sources is enormous. And since the U.S. military is the largest user of liquid fuel for transportation, LENR power sources could produce the greatest transformation of the battlefield for U.S. forces since the transition from horsepower to gasoline power.

Prepared by: Beverly Barnhart, DIA/DI, Defense Warning Office. With contributions from: Dr. Patrick McDaniel, University of New Mexico; Dr. Pam Mosier-Boss, U.S. Navy SPAWAR/Pacific; Dr. Michael McKubre, SRI International; Mr. Lawrence Forsley, JWK International; and Dr. Louis DeChiaro, NSWC/Dahlgren.

Coordinated with DIA/DRI, CPT, DWO, DOE/IN, US Navy SPAWAR/Pacific and U.S. NSWC/Dahlgren, VA.

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<sup>1</sup> Bockris, John. "The History of the Discovery of Transmutation at Texas A&M University," paper presented at the 10<sup>th</sup> International Conference on Cold Fusion (ICCF), Cambridge, MA, 2003.

<sup>2</sup> 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.

<sup>3</sup> The number of protons in the nucleus of an atom determines the identity of the chemical element. Nuclear transmutation occurs when the number of protons in the nucleus is changed by adding or removing protons or converting them to other nuclear particles. Thus transmutation changes one chemical element into another through a nuclear process.

<sup>4</sup> Benedict, M., T. Pigford, and H. Levi, "Nuclear Chemical Engineering," McGraw Hill Series in Nuclear Engineering, 1981.

<sup>5</sup> Hecker, S., "Plutonium: A Historical Overview," *Challenges in Plutonium Science*, Vol. 1, Los Alamos, National Laboratory, No. 26, 2000.

<sup>6</sup> Journal of Electroanalytical Chemistry, Vol. 261, 263, 287, pp 187, 301, 293.

<sup>7</sup> DeChiaro, Louis, "Recent Progress in Low Energy Nuclear Reactions," briefing prepared by NAVSEA, Dahlgren, for DDR&E, 28 August, 2009.

<sup>8</sup> Iwamura, Yashiro, et al., "Transmutation Reactions Induced by D<sub>2</sub> Gas Permeation Through Pd Complexes (Pd/CaO/Pd)," 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.

<sup>9</sup> Hioeki, Tatsumi, et al., "Influence of Deuterium Gas Permeation on Surface Elemental Change of Ion-Implanted Pd," 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.

<sup>10</sup> Celani, Francesco, et al., "Deuteron Electromigration in Thin Pd Wires Coated with Nano-Particles: Evidence for Ultra-Fast Deuterium Loading and Anomalous, Large Thermal Effects," 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.

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- <sup>11</sup> "Exciting New Science: Potential Clean Energy." Abstracts. 14<sup>th</sup> International Conference on Condensed Matter Nuclear Science and International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>12</sup> Mosier-Boss, et al. "Triple Tracks in CR-39 as the Result of Pd/D Co-deposition: Evidence of Energetic Neutrons." *Naturwissenschaften*, 96, 2009, 135-142.
- <sup>13</sup> Mosier-Boss, et al.: Navy SPAWAR briefing, American Chemical Society annual meeting, March 2009.
- <sup>14</sup> "Exciting New Science: Potential Clean Energy." Abstracts. 14<sup>th</sup> International Conference on Condensed Matter Nuclear Science and International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>15</sup> Transmutations only occur when nuclear particles interact and are exchanged to produce different elements.
- <sup>16</sup> Iwamura, Yashiro, et al.: "Transmutation Reactions Induced by D<sub>2</sub> Gas Permeation Through Pd Complexes (Pd/CaO/Pd) 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>17</sup> Yamaguchi, Tatsuya, et al.: "Investigation of Nuclear Transmutation Using Multilayered CaO/Pd Samples Under Deuterium Permeation." 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>18</sup> Iwamura, Yashiro, et al.: "Elemental Analysis of Pd Complexes: Effects of D<sub>2</sub> Gas Permeation." *Japan Journal of Applied Physics*, Vol 41, 2002, pp. 4642-4650.
- <sup>19</sup> Arata, Y.: "Anomalous Effects in Charging of Pd Powders with High Density Hydrogen Isotopes." *Physics Letters A*, 373, 2009, pp 3109-3112.
- <sup>20</sup> Violante, V. et al.: "On the Correlation of PdD Alloy Material Properties with the Occurrence of Excess Power." briefing presented at 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>21</sup> Prelas, M.A., et al.: "A review of Transmutation and Clustering in Low Energy Nuclear Reactions." briefing presented at Vice Chancellor for Research Seminar on LENR, University of Missouri, May 2009.
- <sup>22</sup> Briefings presented at Navy SPAWAR San Diego, LENR meeting, 4-5 August, 2009.
- <sup>23</sup> Mosier-Boss, et al. "Triple Tracks in CR-39 as the Result of Pd/D Co-deposition: Evidence of Energetic Neutrons." *Naturwissenschaften*, 96, 2009, 135-142.
- <sup>24</sup> Mizuno, Tadahiko, "Neutron Emission Induced by Nuclear Reaction in Condensed Matter." briefing presented at Vice Chancellor for Research Seminar on LENR, University of Missouri, May 2009.
- <sup>25</sup> Zhang, et al.: "On the Explosion in a Deuterium/Palladium Electrolytic System." Third International conference on Cold Fusion, 1992, Nagoya, Japan.
- <sup>26</sup> Biberian, Jean-Paul, "Unexplained Explosion During an Electrolysis Experiment in an Open Cell Mass flow Calorimeter." *Journal of Condensed Matter, Nuclear Science*, 2 (2009) pp. 1-6.
- <sup>27</sup> Zhang, et al.: "On the Explosion in a Deuterium/Palladium electrolytic System." Third International conference on Cold Fusion, 1992, Nagoya, Japan.
- <sup>28</sup> Lesin, et al.: "Ultrasonically-Excited Electrolysis Experiments at Energetic Technologies." *Energetics Technologies*, Omer, Israel, briefing presented at 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>29</sup> Jayaraman, K.S.: "Cold Fusion is Hot Again." *Nature India*, 2008. Published online 17 Jan 2008. <http://www.lenr-canr.org/aerobat/JayaramanKcoldfusion.pdf>
- <sup>30</sup> Mosier-Boss, et al.: multiple briefings presented at Navy SPAWAR Pacific, August 4-5, 2009.
- <sup>31</sup> McKubre, Michael, "Studies of the Fleischmann-Pons Effect at SRI International." briefing presented at Vice Chancellor for Research Seminar on LENR, University of Missouri, May 2009.
- <sup>32</sup> Spzak, Stan, et al.: "Evidence of Nuclear Reactions in the Pd Lattice." *Naturwissenschaften*, 92, 2005, 394-397.
- <sup>33</sup> Spzak, Stan, et al.: "Thermal Behavior of Polarized Pd/D Electrodes Prepared by Co-Deposition." *Thermochimica Acta*, 410, 2004, 101-107.
- <sup>34</sup> Mosier-Boss, et al.: "Triple Tracks in CR-39 as the Result of Pd/D Co-deposition: Evidence of Energetic Neutrons." *Naturwissenschaften*, 96, 2009, 135-142.
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- <sup>36</sup> The identity of a chemical element is determined by the number of protons in its atomic nucleus. Transmutation occurs when one chemical element is changed into another one. This normally occurs during radioactive decay, but can occur from any number of nuclear processes that add or subtract protons from the atomic nucleus.
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- <sup>47</sup> Lesin, et al.: "Ultrasonically-Excited Electrolysis Experiments at Energetic Technologies," Energetics Technologies, Omer, Israel, briefing presented at 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>48</sup> Tsvetkov, S.A.: "Possibility of Using Cold Fusion for Nuclear Waste Products Transmutation," 16<sup>th</sup> International Conference on Cold Fusion, Cambridge, MA, 2003, from LENR-CANR.org website:
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- <sup>50</sup> Personal correspondence, Dr. Michael McKubre, SRI International, October, 2009.
- <sup>51</sup> Forsley, L.: "Lattice Assisted Nuclear Reactions: Overview of an Unexpected Phenomena," First Colloquium on Nano-Nuclear Science l'Universite catholique de Louvain, Belgium, May 4-5, 2009.
- <sup>52</sup> Personal correspondence, Mr. Lawrence Forsley, JWK International, October, 2009.
- <sup>53</sup> In Japan, the three major automakers are supporting LENR research. In Italy, Pirelli Labs is one of many corporate and governmental sponsors of LENR research.
- <sup>54</sup> Biberian, Jean-Paul: "Unexplained Explosion During an Electrolysis Experiment in an Open Cell Mass flow Calorimeter," *Journal of Condensed Matter, Nuclear Science*, 2 (2009) pp: 1-6.



**IN THE MATTER OF ARBITRATION**

**Between**

**Patent Office Professional Association**

**and**

FMCS Case No. 00-01666  
Employee Termination

Robert T. Moore  
Arbitrator

**US Department of Commerce,  
Patent and Trademark Office**

**DECISION AND AWARD**  
**ON THE MERITS**

**Appearances:**

For the Patent Office Professional Association (POPA or Union):

Raymond B. Johnson  
David L. Robertson

POPA Representative  
POPA Representative

For the US Patent and Trademark Office (Agency, Management or PTO):

William Way, Esq.

Associate Counsel, Office of  
General Counsel, PTO

**Issue Presented**

The parties did not stipulate to an issue, and while the evidence raised important sub-issues which will be addressed, the principal issue is found to be:

Whether the Agency's removal of the grievant from federal service was "for such cause as will promote the efficiency of the service," as prescribed by 5 USC §7513 (a), and was otherwise in compliance with the laws, rules and regulations of the United States and provisions of the parties' Labor Agreement, and if not what should the remedy be?

### **Applicable Statutory and Labor Agreement Provisions**

The statutory and Labor Agreement provisions of importance in this arbitration will be quoted where their relevance and their construction by the courts and the governing agencies charged with their enforcement are discussed.

### **Facts**

**General Background Facts:** The US Patent and Trademark Office (PTO) is an agency within the US Department of Commerce responsible for granting patents and registering trademarks. The Patent side of the PTO is divided into Technical Centers which correspond to the nature of patent applications they examine. For example, a chemical-based patent application goes to one Technical Center while a mechanically-based application would go to another. Once in a Technical Center, the distinction between applications becomes yet more refined until a patent application is assigned to an "Art Unit," and then to an Examiner with specialized knowledge and experience in the primary "Class" and sub-class of the application.

The grievant was a Patent Examiner who began his PTO employment in July, 1996 at the GS 9 level. By education and training, he is an Electrical Engineer. At the time of his removal from service on August 30, 1999, he had advanced to GS 11. His responsibility had been to examine patent applications for devices and processes intended for various types of measuring and testing, which under the PTO Patent Classification System were designated as Art Unit 2858, Class 324 patent applications. Within this Class, the grievant's work was further limited to applications involving, as examples, an "internal combustion engine ignition system or device," or a "material property using thermoelectric phenomenon," or a device "using ionization effects."

Then, within each of these subclasses, such as the last, "a device or process for measuring or testing using ionization effects," the device or process would be further assigned to a sub-subclass such as "for monitoring pressure," with yet another breakdown into whether the monitoring was dependent on measuring fluctuations in the power emissions from (a) "a radioactive substance," (b) "thermionic emissions," (c) "a magnetic field," or still some other source. Altogether, the grievant was responsible for approximately 17 subclasses of Class 324 under each of which were as many as a score of very specific "method" and "purpose" subclasses based on the materials used, the means of making the measurements, or the objectives of the test.<sup>1</sup>

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<sup>1</sup> The identification of the grievant's assigned Art Unit or Group may be off the mark. The testimony and documented evidence is confusing when it comes to numerical, versus subject matter, unit designations. It appears that when some events in issue occurred, the Patent side of the PTO had an organizational structure based on "Work Groups," which at a point in time not firmly established in the

What is important is that no patent applications for which the grievant served as an examiner had anything to do with his non-official obsessions. Those obsessions are with alternative sources of energy relying on non-conventional theories which have generally gone unrecognized, or been flatly rejected, in the conventional scientific literature. The more controversial of the grievant's interests are in theories which defy the accepted laws of physics. Central among these, but certainly not his exclusive area of interest, was cold fusion.

**The Cold Fusion Controversy:** Up until 1989, the possibility of cold fusion was an acceptable scientific topic among physicists and others in the world of nuclear science. That acceptance received a setback in 1989 following the public announcement by two recognized and respected electro-chemists at the University of Utah that they had achieved fusion using a battery connected to palladium electrodes submerged in heavy water (water, the hydrogen component of which has been replaced by its isotope, deuterium). Since less energy was claimed to have been expended by the battery than the amount of energy produced, the realization of a device which could steadily (versus explosively) produce more energy (output) than the amount needed (input) in its production seemed to have been achieved.<sup>2</sup>

Scientists elsewhere immediately sought to duplicate this "table top" accomplishment of cold fusion, but with nary a replication. The simple formulation from Utah was a dud. The revolutionary announcement had been premature, and the importance of prior peer review was forever firmly associated with "scientific breakthroughs." It discredited all research into cold fusion and other non-conventional sources of energy, and pushed those who continued to pursue or support such ideas into the fringe or "kook" segments of physics and chemistry. More important, before the year 1989 was out, the US Department of Energy (DOE) pronounced cold fusion to be unworthy of further government financed research.

The grievant is a member of the fringe, though not personally experimenting with cold fusion or any other energy alternative. He is only an outside observer with strong

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record, was changed to a structure based on "Technical Centers" and a whole new numbering system. Thus, the grievant is referred to in the record as being in Art Unit 2200 and at other points as being in 2858. That seems to reflect only a numerical change without a change in his duties or the nature of the patent applications he examined. To avoid confusion, the unit to which the grievant was assigned will be referred to as the "measurements group."

<sup>2</sup> If recollection serves, the claimed accomplishment was heralded in news media around the world for its promise of free energy. If true, it would unshackle the industrial nations from their dependence on fossil fuels and reverse the deforestation of the developing nations of sub-Sahara Africa and the Indian subcontinent. It appeared that the earth's environment would be saved and electricity would light every home in the poorest countries of the world. Its implications were just startling.

beliefs about the place cold fusion and other yet to be proven sources of energy have in the future mix of the world's electrical power production. However, he does not reject the Newtonian laws of physics as some in the fringe may appear to regularly do. Rather, it is his position that the presently ridiculed theories he champions, or at least believes are sufficiently promising to warrant more serious scientific inquiry, will eventually be found to be consistent with accepted axioms of physics and chemistry, but how that will be done, he insists, just has yet to be discovered. Still, this puts him at odds with most scientists in those two fields.

It also placed him at odds with the prevailing policy of the PTO. Currently, patent applications for alternative or non-conventional sources of nuclear fusion energy, including cold fusion, are routed to Examiner Harvey Behrend. This routing has been going on for more than 16 years pursuant to a June 5, 1989 memo to all Group Directors with the subject; Cold Fusion Applications. It reads:

Although the media attention relating to cold fusion has diminished, we are just now beginning to see a large number of applications relating to this subject. Although we are attempting to identify all of these applications in the pre-examination screening process, there is the possibility that a few applications may slip through without being identified. Please have your examiners be on the look out for any application that may relate to cold fusion. Some of the areas where a cold fusion application might be filed are:

Fuel Cells	class 429
Electrochemistry	class 204
Power plant	class 60
Radiant energy	class 250
Helium production	class 423

If one of your examiners should receive an application related to cold fusion, he or she should check to make sure the words "COLD FUSION" are stamped on the file wrapper. If not, the application should be referred to Licensing and Review [ ] for marking. Also, any action on one of these applications should be routed through the Group 220 Director's Office and the Office of the Assistant Commissioner for Patents prior to mailing.

The Agency's witnesses avoided directly answering the question of what explicit instructions were given Mr. Behrend and other examiners in the "fusion" group on how to handle applications for cold fusion patents. However, their testimony and demeanor when questioned were clear enough.

Figuratively speaking, Mr. Behrend has a "rejected" stamp he wields on patent applications which claim to achieve cold fusion. That is, whether well founded or not, the PTO has a bias against the concept and theories of cold fusion. Largely because they defy the Newtonian proposition that there is "no free energy" or "perpetual motion" within the bounds of physics, the PTO considers cold fusion to be "inoperable technology." The evidence of this will become more concrete shortly in connection with the grievant's pro-cold fusion activities.

As for those activities, the Agency did not claim in the Proposal to Remove that the grievant's belief in the possibility of "free energy" affected anything he did in accepting or rejecting patent applications assigned to him. Among other things, those applications had nothing to do non-conventional sources of power. All applications channeled to the measurement group depended on conventional sources of electrical, magnetic, and other energy.

The grievant's obsessions with alternative and scientifically controversial energy sources were no secret. And, they were an embarrassment to the PTO. Always as simply a private citizen in a Quixote crusade, he regularly resorted to the Internet and took advantage of public and private conferences and other gatherings where long term and future energy needs were on the agenda. By both means, he advocated greater public and private funding for research and experimentation in the fields of new or non-conventional energy, and sought recognition in the established scientific community of the legitimacy of those fields of research. Without that recognition, the prospects of either private sector investment or public funding were slim to the point of nonexistent. His principal soapbox was the Integrity Research Institute (IRI), a nonprofit organization which he formed and ran as its president with a handful of members and volunteers.

There were and are forces as adamantly opposed to accepting the viability of the principal areas of that research as the grievant is their advocate, especially when the subject is that of "cold fusion," a phrase often used here just as in the PTO memo, to embrace not only that idea, but the full spectrum of searches for free, or at least low cost, sources of energy. The main watchdog out to discredit the grievant and other, more prominent like-minded advocates, was Robert Park. He is the Communications Director of the American Physical Society, a respected association of mainline physicists. Mr. Park is also the author of the popular book, Voodoo Science, which with little mercy, debunks cold fusion and all other concepts of "free energy."

**The Removal Proposal:** The Removal Proposal was prepared by Sydney Rose, the PTO Labor Relations Specialists responsible for disciplinary matters. It was given to and signed by Margaret A. Focarino, the grievant's second or third line supervisor, on May 7, 1999 and charged the grievant as follows:

On March 9, 1999, you contacted the Department [of Commerce,] Office of Administrative Operations (OAO) by telephone. You spoke to Margaret House, Support Services Staff, and asked her about the procedures for reserving conference space for a private function. You were told that space was not usually reserved for private functions but that you could file a written request [with Telita Holloway?] which would be reviewed and considered. You called again and indicated that you come to the Department to meet with Telita Holloway that afternoon. At approximately 5:00 p.m. that afternoon, you met with Ms. Holloway and indicated that you were a PTO employee. For the next hour and a half, she showed you the Department's auditorium, lobby and various conference room. You never indicated to Ms. Holloway that you were considering reserving space at the Department for a private function to be run by the Integrity Research Institute. However, you reserved the auditorium, lobby and four conference rooms at the Department for April 29, 30 and May 1, 1999, on behalf of the PTO.

You posted information regarding a Conference on Future Energy on the Internet. The website indicated that [ ] the First International Conference on Future Energy (COFE) was 'in cooperation with the U.S. Dept. of Commerce.' The notice contained an electronic brochure form which indicated that the 'Integrity Research Institute under the auspices of the U.S. Department of Commerce at 14<sup>th</sup> and Constitution, Washington, DC, presents the first COFE in the main Auditorium. Lectures will extend from 9 AM to 5 PM daily and workshops on Saturday from 9 AM to 5 PM.' The posting indicated that the Saturday workshops would cost \$30.00 each, and there was a \$20.00 charge for videotapes and a \$30.00 charge for the book 'Proceedings of COFE'.

You posted a message on the Internet which indicated the following:

Interested in advanced energy technologies that won't produce global warming? Then don't miss attending the First International Conference on Future Energy, cosponsored by the U.S. Department of Commerce and Integrity Research Institute! . . .

The Conference was common knowledge in that Matthew Heyman, Public and Business Affairs, National Institute of Standards and Technology sent Richard Maulsby, PTO Public Affairs, an e-mail on March 22, 1999, in which he provided Mr. Maulsby with information about the conference and [the] promotional materials [ ] 'under the auspices of the U.S. Department of Commerce.'

of his misrepresentations that the DoC was a sponsor of the COFE, and that COFE was being presented under its auspices, as matters demanding discipline.

Up to now, the grievant and the Union have relied on the lack of any Agency evidence that he was the one that actually pressed the computer "enter" key that transmitted his handiwork into the ether of the world of the Internet. Unless he, with the guidance of his Union representatives, accepts responsibility for his misrepresentations and their dissemination, the prospects for his rehabilitation are dim.

On the other hand, only if the message of this Decision is lost on the grievant, he can prove himself a model of "rehabilitation," and return as a productive patent examiner. But, he must understand that message. The PTO is out to get him for his advocacy of cold fusion and will clobber him with a Removal Proposal which next time around, perhaps with guidance provided herein, it will be able to make stick. Screw up once more in publicly evidencing his advocacy of cold fusion which in its appearance implicates the DoC, PTO, or any other federal agency, the grievant should understand that his employment as a patent examiner is at an end.

Mitigating Circumstances. Guidelines for this factor traditionally call for consideration of "unusual job tensions, personality problems, mental impairment, harassment, or bad faith, malice or provocation on the part of others involved in the matter." Of these, "job tension" is a way of life for examiners, and while the PTO goal system might be viewed by outsiders as contributing to an "unusual" sweatshop atmosphere, there is no evidence that it had anything to do with the grievant's misconduct. There is evidence that the grievant has "personality problems" in his inability to accept responsibility for his actions and those of others which he sets in motion, but it is not a mitigating circumstance as much as it is an exasperating circumstance which the grievant must address, both to hold his PTO job as well as to be the effective voice of emerging technology he would like to be in his out-of-office activities.

There is also no evidence of a mental impairment which led to the grievant's misconduct. What there is evidence of is "harassment, or bad faith, malice or provocation on the part of others involved in the matter," and it came in bundles. The activities and motives of Bank and Zimmerman have been extensively recounted and explained, and with regard to the cancellation of grievant's State Department, Secretary's Open Forum presentation, deplorable. The malice shown by Bank in his solely economic driven campaign to block any of the nontraditional scientists from receiving recognition by any government agency as having an idea worthy of a slice of government R&D funding may be a point of pride within the APS. But to an outsider who champions free and open exploration of any scientific thought, no matter how far out on the fringe, his conduct is outrageous. The worth of a new idea is to be determined in the democratic and open arena of competing thoughts, and not blocked from the arena by the greedy

economic self-interest of those already in the limelight.

Seemingly lost on those with control over slicing the government pie who are persuaded by the relentless drumbeat of the Banks and Zimmermans, is that those questing for "free energy," whether through cold fusion or by way of some other "emerging technology," may be similar to the alchemists of centuries back who never turned base metals into gold, but were the forerunners of modern chemistry, got the Periodic Table of Elements off to a start, and among all things, discovered how to duplicate Asian porcelain which at the time was worth more than its weight in gold. So too, those in pursuit of "free energy" could well spinoff useful advances in knowledge while failing to achieve their "holy grail."

This gratuitous thought in passing leads to another. Clearly, the grievant was "bugged" by the PTO's 1989 Cold Fusion Memo, and because the bug is arguably justified, both the bug and the memo constitute mitigating circumstances. However, they have little mitigating force. They are more like the PTO's goal system. The grievant must accept the Agency's policy as part of the "usual" job tensions of the PTO; for him, a like-it-or-leave situation.

Still, I was struck by the discomfort of Mr. Godici as he struggled to explain why the blanket exclusion of cold fusion remains in effect when during the intervening 16 years since its adoption, certainly some better understandings and approaches to cold fusion and its related technologies must have occurred which, ordinarily and but for the ban, would meet the new and useful criteria for a patent, or constitute what I'll call, a "non-obvious improvement of existing technology." Of course, this was not the exact question put to him, but it was the sum and substance of the "conversation" (more formally known as testimony) had about Mr. Behrend's role and his automatic REJECTED stamp.

None of Mr. Godici's answers was totally satisfactory, and the urge, not well restrained, to say, if not scream:

Hold it a minute! Isn't time to go back to the earlier days of the PTO when inventors had to produce working models of their devices? It can't it be an applicant's option, and while the days of obvious and easily visible confirmation of claim's have come and gone, the PTO has the National Institute of Standards and Technology to test and verify or reject claims of subtle, hard to grasp accomplishments. And, if the NIST lacks that capability, there are DoE and scores of DoD labs that in collaboration with the PTO could undertake the task.

This is not to suggest that the PTO open the floodgates to every kooky idea out



there, but rather that it loosen the apparently nondiscriminating, blanket nature of the 1989 memo, and that Mr. Behrend be allowed, or encouraged, to wield his stamp less frequently and more selectively.

Adequacy and Effectiveness of Alternative Sanctions. What has been said about the prospects for the grievant's rehabilitation largely addresses this factor, but there is an additional observation warranted here. For sure, the ultimate penalty of removal would deprive the Agency of a "fully satisfactory" performing examiner who regularly met his goals, and never let his private obsessions influence any official actions he took with regard to the patent applications assigned him for examination. That cannot be ignored, nor can the likelihood that the 30-day suspension, and the hardships of his last six years, many aspects of which cannot be undone solely with a 5 USC §5596 back pay recovery, will have and have had their chastening effects.

### **AWARD**

For the above stated reasons, the grievant's removal was not for good cause nor in furtherance of the efficiency of the federal service, and must be mitigated. Thus:

1. The grievance is sustained in part and the removal of the grievant shall be mitigated and reduced to a 30 calendar day suspension without pay for the offense of Misrepresentation, with the 30 days already served, and the grievant immediately returned to his position as a patent examiner at an interim pay and with annual and sick leave accumulation levels no less the levels he held at the time of his removal. For no reason other than at the request of the grievant, shall his return to service be later than 30 days from the date of this Decision and Award, even if there are questions or disputes between the Agency and POPA which have not been resolved in accordance with the procedures set out below.

2. All reference to the removal shall be permanently expunged from the grievant's personnel file, to be replaced by a suspension of 30 calendar days without pay.

3. Because the grievant's removal was an unjustified or unwarranted personnel action which has resulted in the withdrawal of his pay, and any allowances or differentials, he is entitled to a recovery with interest, subject to such adjustments as the law allows for his interim earnings, of those withdrawals under 5 USC §5596, as well as to have all lost annual and sick leave restored. Subject to any determination to the contrary made in the course of the further proceedings provided for below, the grievant's 5 USC §5596 recovery shall be calculated on the basis of any and all promotions and grade step advancements to which he would have been entitled if his job performance and proficiency had continued at the same level for which he had been rated during the course of his employment with the PTO prior to his removal, all of which

shall be presumed.

### **RETAINED JURISDICTION**

Jurisdiction of this arbitration is retained for the following purposes and in accordance with the schedules indicated:

**1. Notification of the Grievant's Return to Service.** Within 14 days of receipt of this Decision and Award, the Agency shall report the date of the grievant's return to service and the interim General Schedule (GS) pay grade and step level at which he resumes service. If the grievant has not been returned to service within 14 days of this Decision and Award, the Agency shall report the reason or reasons why not and the date set for his return and the interim GS pay and step level at which he will reenter federal service.

If the Union has any objection to the date and interim GS pay grade and step level set by the Agency, it and the Agency shall have 7 days from the date of the Agency's report to meet (which they are hereby ordered to do) and resolve their differences by agreement so that the grievant will be returned to service within 30 days of the date of entry of this Decision and Award.

Should those efforts fail or an agreement not yet be reached by the end of the 14 day period, the Union and the Agency shall separately file reports detailing their differences and advising whether I will have to intervene. If either report calls for my intervention, the party requesting that intervention shall arrange a conference call with the other party and me during which the disputed matters shall either be resolved on an interim or permanent basis, or after further proceedings are scheduled.

**2. Determinations of Back Pay Recovery and Current Pay Grade and Job Title of the Grievant's Reinstatement, etc.** Should the parties not have agreed to any aspect of the grievant's 5 USC §5596 recoveries within 60 days of the date of the Decision and Award, by the 61st day, they shall initiate a joint telephone conference call with me to set a hearing date on the open questions.

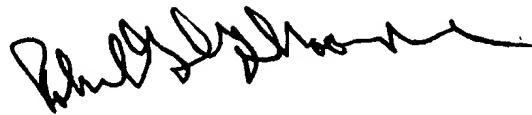
**3. Protection of the Integrity of this Arbitration.** It would appear that there were persons within the PTO who assisted the grievant in his efforts to obtain the use of the DoC facilities about whom the Agency was unaware before the hearing in this case. I expect nothing untoward to befall any of them, but that everyone involved in this case will place it behind them and get on with their lives and the collegial harmony for which the PTO is justly known.

If my expectations prove wrong, be assured I will take all such actions as I may

posses the power and authority to correct my error

**4. Correction of Typographic, Numerical, and Other Errors which will Not Change the Award.**

**DONE**, this 30th day of July, 2005.

A handwritten signature in black ink, appearing to read "Robert T. Moore", written over a horizontal line.

Robert T. Moore  
Arbitrator

Source: <http://newenergytimes.com/Library/2004Valone-USPTO-Hearing.pdf>

BEFORE ARBITRATOR ROBERT T. MOORE

- - - - - X

PATENT OFFICE PROFESSIONAL  
ASSOCIATION (POPA),

Union,

THOMAS VALONE,

Grievant,

-vs-

FMCS NO.: 00-01666

U.S. DEPARTMENT OF COMMERCE,  
PATENT AND TRADEMARK  
OFFICE,

DOCKET NO.:  
09-9-TV-10

Agency.

- - - - - X

Arlington, Virginia

Thursday, October 28, 2004

Day #4

Pursuant to Notice, the above-entitled hearing was held before ROBERT T. MOORE, ARBITRATOR, at the United States Patent and Trademark Office, Crystal Park 2, 2121 Crystal Drive, Suite 714, Arlington, Virginia, commencing at 1:23 o'clock p.m., there being present on behalf of the respective parties:

## APPEARANCES:

On Behalf of the Patent Office Professional Association:

RAYMOND JOHNSON, Union REPRESENTATIVE  
DAVE ROBERTSON, Union REPRESENTATIVE  
Patent Office PROFESSIONAL ASSOCIATION  
P.O. Box 2745  
Arlington, Virginia 22202  
(703) 308-2565

On Behalf of the U.S. Patent and Trademark  
Office:

WILLIAM WAY, ASSOCIATE COUNSEL  
OFFICE OF THE GENERAL COUNSEL  
U.S. PATENT AND TRADEMARK OFFICE  
Crystal Park 2, Suite 903  
2121 Crystal Drive  
Arlington, Virginia 22215  
(703) 305-5907

Also Present: Thomas Valone

\* \* \*

THE ARBITRATOR: --enthusiasm of --

THE WITNESS: Actually, there was confusion.

The Brigham Young people, for a long time, didn't believe that there was such an effect as excess heat. They now do. Steven Jones does now believe it.

THE ARBITRATOR: Well, weren't there some people in Missouri, too? Or am I just confused with --

THE WITNESS: Well there was one professor at Columbia University or -- There was one professor from Columbia, Missouri, who did some of this.

But there's been a real community that's gone far beyond this. The best work has been at SRI.

THE ARBITRATOR: Okay. As fascinating as it is, and I'd love to have lunch with you sometime --

THE WITNESS: Right.

THE ARBITRATOR: -- but right now I've interrupted, so let's get on with your questioning.

MR. ROBERTSON: Okay.

BY MR. ROBERTSON:

Q Did the Patent Office ever reject a test or demonstration of a cold fusion invention to your knowledge?

A Did they ever reject -- Yes.

Q Could you elaborate, please?

A Let's see.

Q What you know.

A Mitchell Swartz had the prime example. In Mitchell Swartz's case, Mitchell Swartz brought his case all the way to the Supreme Court where it was not examined, or they didn't hear the case.

It did go through the Court of Appeals, and I filed an amicus curiae on his behalf in that case.

There have been others. I mean, I don't know the specific numbers of the cases, but it's common knowledge within the field. Mitchell Swartz's case has the most profound documentation associated with it.

Most people just gave up when it was very much just the name "cold fusion" associated with the patents, or they would cite Pons and Fleischmann.

THE ARBITRATOR: For what proposition? For failure?

THE WITNESS: Yes. They would just say -- Mitchell Swartz, for example, showed me something where the fact that he used the reference Pons and Fleischmann led to just the statements that this was a non-existent phenomenon.

Now, the MIT people and SRI have recently gotten a patent. They battled for many years with this, too. I know there were initial rejections.

THE ARBITRATOR: And what did they get a patent for?

THE WITNESS: Their's was for excess heat as well.

THE ARBITRATOR: And --

THE WITNESS: Heat. Creating heat.

THE ARBITRATOR: So, it has been accepted that they did prove --

THE WITNESS: I'm fairly certain it -- I think that that one has been accepted. It may not have been accepted. It's out there right now if it hasn't been.

And as you'll notice, the one that was awarded on July 20th to Melvin Miles and Ashraf Imam doesn't mention cold fusion and it doesn't mention excess -- It talks about heat. I think they talk about excess heat in their abstract.

THE ARBITRATOR: But they describe a

--

THE WITNESS: A palladium boron alloy.



THE ARBITRATOR: The palladium boron alloy, was that a part of the original Brigham Young --

THE WITNESS: No. Pons and Fleischmann were the ones. They used just regular palladium. When you put the boron in, it makes a difference, because it separates the palladium crystals and makes them smaller and the compound is better.

THE ARBITRATOR: What are some of the other uses of boron?

THE WITNESS: Oh, man, I don't know.

THE ARBITRATOR: But it is widely used?

THE WITNESS: Yes.

THE ARBITRATOR: As an alloy?

THE WITNESS: No. Boron is a light metal. I'm not exactly sure what they use it all for. It might be used for --

THE ARBITRATOR: It's a light metal?

THE WITNESS: Yes. I think it's a -- Boron is like a -- Isn't it Group 2?

THE ARBITRATOR: Atom-weight, you mean?

THE WITNESS: Yes. It goes lithium and then boron. I think it's Atomic No. 4 or 5.

THE ARBITRATOR: So, it's real light.

THE WITNESS: It's very light; yes. And I think in things like Borax, they'll use it as a cleaning agent, you know. It's reactive.

THE ARBITRATOR: Okay. Oh, yes. All right. Now I remember the stuff. Yes.

THE WITNESS: But in this instance, what the boron served to do was to create a matrix where the palladium could reside.

The particular material was an alloy in which there was sufficiently small amounts of palladium that the palladium would literally just form -- they wouldn't go into individual sites within the boron. You would get little crystals.

And, now, the important point --

THE ARBITRATOR: Little what?

THE WITNESS: Little crystals.

THE ARBITRATOR: Okay.

THE WITNESS: Crystals of palladium.

And the important point in this context was that in order for the process to work, you have to be able to expel the helium. If the helium gets trapped in the metal -- because when it bonds with its electrons, it expands in size -- it cracks the metal and that

destroys the process.

And so, that was actually the motivation for Miles and Imam making these particular alloys.

Now, the interesting thing about these alloys is that they created excess heat every time except once. And the one time it didn't work was when the alloy cracked, which was, again, to be expected.

The point is, in order to get this funny kind of configuration --

THE ARBITRATOR: We're talking about an alloy. Of course, I have visions of a strip of metal, but that's not necessarily what you've got here; right?

THE WITNESS: No. It's a porous medium, really, with palladium inside it.

THE ARBITRATOR: Well, anything could be porous --

THE WITNESS: Yes.

THE ARBITRATOR: -- microscopically, but is it --

THE WITNESS: Yes.

THE ARBITRATOR: -- something you can look at?

THE WITNESS: Yes. It looks like a -- It

just looks like a -- It looks like mostly boron.

THE ARBITRATOR: Well, I --

THE WITNESS: There's another. Carbon is another one. They've actually done this with carbon as well.

THE ARBITRATOR: Yes. All right.

THE WITNESS: In other words, if you were to picture --

THE ARBITRATOR: Slow down. I think she's about to go crazy.

THE WITNESS: I'm sorry.

THE ARBITRATOR: You're going to have to give the court reporter a glossary, you know, of --

THE WITNESS: Okay, I'm sorry.

THE ARBITRATOR: -- terms and then she, in turn, is going to put a lot of parentheses and fill in what --

THE WITNESS: All right. Well, I've probably said enough.

THE ARBITRATOR: All right; okay. Enough is enough. I mean this is -- One, I get your point, and believe it or not I do understand maybe ten percent of it.

THE WITNESS: Am I done?

THE ARBITRATOR: No. You've got me.

THE WITNESS: All right.

THE ARBITRATOR: But I'm going to be really quick.

I just want you to know the problem facing me in this case, and actually get your opinion about what I should do about it, and that is this.

Kind of key to what went on with regards to at least what I'm going to call the misrepresentation, if not conflict of interest, in the dealing of Mr. Valone with the Department of Commerce, the Agency's case is all based on hearsay evidence.

I mean, you never talked to any of these people. And more troubling is that, because these people have disappeared, the Union has never had an opportunity to talk with them, to ask them, you know, exactly what did Ms. House -- Ms. House, what did Mr. Valone say to you? Did he tell you that? Did he explain this?

Likewise, we can't even produce the PTOS president at the time. He won't have anything to do with this. He absolutely refuses, and nobody has come

to me to seek a subpoena so, you know, we could send them off to District Court and see if they can get a subpoena to compel his testimony.

So, nobody from the Union has been able to say to this guy, okay, do you remember such and such a conversation that you had with Mr. Valone? What did Mr. Valone say to that? The education committee, he was on some education committee of the PTOS, Mr. Valone was, and we don't know what happened there.

But my trouble is that the people who had information upon which the Agency relied can't be -- nobody can ask them a question. And we've just got these e-mails back and forth about this, that, and the other, but it's not any e-mails the Union participated in, posing questions or anything like that.

So, my job is to provide all parties with a full and fair hearing. And generally speaking, that means an opportunity to develop their case and to cross examine the witnesses and the information the other side relies on, or at least question the information.

I don't know what to do. What do you think I ought to do?

THE WITNESS: Well, I appreciate your -- You've got a difficult job in terms of trying to -- I mean, we're all trying to resurrect facts and events that occurred five years ago or whatever it is now, and that's difficult. It's difficult for me. I know it's difficult for you.

But I think that we have to rely on the evidence in front of us to make a decision, and that sometimes can be difficult.

THE ARBITRATOR: Well, you probably don't know, but I'll tell you, in a disciplinary case, with regards to the evidence, the burden of producing persuasive evidence is on the Agency. In non-disciplinary cases, it's on the Union.

But here it's on the Agency, so that -- And I might say, I mean, I think that some of the things that I've mentioned about what Mr. Valone has done here I think are -- well, let me put it this way, I'm troubled by them. I'm troubled by the representations made here or that got made here. We'll put it that way. Whoever made them, it got made.

THE WITNESS: Right.

THE ARBITRATOR: But I don't know --

THE WITNESS: Can I just make a very

--

THE ARBITRATOR: Sure.

THE WITNESS: -- short comment?

THE ARBITRATOR: That's exactly what I'm inviting.

THE ARBITRATOR: Okay. Well, the way I looked at this case, and hopefully the way that you may have looked at this case, is that this is more than just an argument over trying to reserve some space and whether or not the proper procedures were followed or who said what and so on and so forth.

I mean, it's pretty clear that something happened down at the Department of Commerce and Mr. Valone attempted to set up a conference down there.

The thing that I think is most troubling with respect to this is that there was a series of things, some of which Mr. Valone was counseled for, leading up to this event where actually Mr. Valone was trying to manipulate, so to speak, the system for his personal interests.

And when, you know, I'm responsible for an agency that is supposed to be completely impartial and



administer the laws, when there are actions by persons within the Agency that cast doubt on our ability to be impartial, that's the troubling part of this.

And those are the actions that --

THE ARBITRATOR: So, this is like the job announcement?

THE WITNESS: Exactly. I mean, there are pieces of this that just kept piling up and piling up and piling up, and my ability to rely on Mr. Valone to do the job impartially is destroyed, and I think those actions clearly cast some dispersion on the impartiality of the Agency.

So, that was the basis of my decision. And you can get down into the nuts and bolts of what happened when he walked over to the Commerce Department and who said what, but I looked at it as a bigger picture.

THE ARBITRATOR: Oh, yes, yes, yes. And I can appreciate what you're saying, and I will certainly -- Because I have respected you from the first time I met you, and I respect particularly your concerns about running your agency.

I can even appreciate your concern extending

-- well, being as broad as it is with regards to Mr. Valone.

I guess the problem I have is, if you've got all of these patent examiners and they're so very specialized -- And at least in this instance, his area of specialization, as I understand it, has absolutely nothing to do with any of these other advocations, and it's these other advocations that have gotten him into trouble because he has crossed the line in their pursuit.

But they really don't have anything to do, though, with his ability to judge patents that come in in his whatever you call it, his specialty within his art unit.

So, I'm saying, well, my goodness me, you know, while I agree that all officers of the United States government should be above reproach and I should have total confidence in their exercise of their judgment, I know, as a manager myself in the federal government, that certainly I never had total confidence in all the judgment of the employees who worked under me.

Some of them, with regards to some subject

matters, I wouldn't have any confidence in their judgment. But those subject matters were not ones that were at all within their job description as a necessary ingredient.

Although, you know, I would still be disturbed by conduct comparable to Mr. Valone's of someone misrepresenting the Department of Justice.

But I would still -- If they misrepresented their -- In what capacity from the Department of Justice they were showing up and doing something, before I canned them, I'd certainly have to be absolutely certain what they said to who, and I would know that I would have to produce, either before the Merit System Protection Board or somebody, the witness I was relying on so there would be an opportunity before the administrative law judge or whatever to cross examine.

THE WITNESS: Well, unfortunately, five years have gone by in this case --

THE ARBITRATOR: Yes, I know it.

THE WITNESS: -- and neither of us had any control over that.

THE ARBITRATOR: And I don't know who's to

blame for that. I really don't. I don't know.

But, anyway, I wanted you to know what my concerns are. I wanted to get your reaction, and we'll just have to see.

But anything you want to tell me further, have at it.

THE WITNESS: Well, I think you've done a great job, and I'm not trying to be pejorative, but this is a tough decision, and I think I've stated my rationale and my reasons why I don't feel that Mr. Valone can be trusted to do the job.

THE ARBITRATOR: Well, next I get to hear their case, and I'll be telling them some things. So, anyway, with that, I pronounce this adjourned unless somebody has something else to say. And we meet back, what, on Monday?

MR. WAY: Monday at ten here.

THE ARBITRATOR: Ten o'clock. All right. Ten o'clock here in this room.

\* \* \*

(Whereupon, at approximately 6:56 o'clock p.m., the hearing in the above-entitled matter was adjourned for the day.)

\* \* \*

CERTIFICATE OF COURT REPORTER

I, PATRICIA D. STAFFA, the Verbatim Reporter who was duly sworn to well and truly report the foregoing proceedings, do hereby certify that they are true and correct to the best of my knowledge and ability; and that I have no interest in said proceedings, financial or otherwise, nor through relationship with any of the parties in interest or their counsel.

IN WITNESS WHEREOF, I have hereunto set my hand this 9th day of November, 2004.

PATRICIA D. STAFFA  
Court Reporter

## APPENDIX "C"



UNITED STATES DEPARTMENT OF COMMERCE  
 Patent and Trademark Office  
 ASSISTANT SECRETARY AND COMMISSIONER  
 OF PATENTS AND TRADEMARKS  
 Washington, D.C. 20231

Memorandum

DATE June 5, 1989  
 TO All Group Directors  
 FROM Christopher L. Cage, Director  
 Group 220  
 SUBJECT Cold Fusion Applications

RECEIVED  
 JUN 6 1989  
 DIRECTOR'S OFFICE  
 OF PATENTS AND TRADEMARKS

Although the media attention relating to cold fusion has diminished, we are just now beginning to see a large number of applications relating to this subject. Although we are attempting to identify all of these applications in the pre-examination screening process, there is a possibility that a few applications may slip through without being identified. Please have your examiners be on the look out for any application that may relate to cold fusion. Some of the areas where a cold fusion application might be filed are:

Fuel Cells	class 429
Electrochemistry	class 204
Power plant	class 60
Radiant energy	class 250
Helium production	class 423

If one of your examiners should receive an application relating to cold fusion, he or she should check to make sure the words "COLD FUSION" are stamped on the file wrapper. If not, the application should be referred to Licensing and Review, CP4-10C23 for marking. Also, any action on one of these applications should be routed through the Group 220 Director's Office and the Office of the Assistant Commissioner for Patents prior to mailing.

Thank you for your cooperation. Should have any questions, please contact me.



UNITED STATES PATENT AND TRADEMARK OFFICE

mtg. on 4/24/06

Commissioner for Patents  
United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

DATE: March 27, 2006

TO: TC 2800 managers

FROM: Janice A. Falcone, Group Director  
Sharon Gibson, Group Director  
Robert Oberleitner, Group Director  
Richard K. Seidel, Group Director  
Arthur Grimley, Acting Group Director

SUBJECT: Reminder on TC 2800 Guidelines for Sensitive Application Warning System (SAWS) Program Reminder

This is to remind our personnel that Technology Center 2800 has in place a SAWS program based on the following guidelines. All TC 2800 managers must remind their examiners of this program and its implementation.

Attached is the updated TC 2800 SAWS program. Please review and disseminate.



## **SPECIAL APPLICATION WARNING SYSTEM (SAWS)**

Technology Center 2800  
March 27, 2006

### **I. PROGRAM OVERVIEW:**

The SAWS program was designed to assist in processing of patent applications identified as claiming subject matter of special interest that, if issued, would potentially generate high publicity or would potentially have a strong impact in the patent community. It is also an information gathering system to apprise various segments of the USPTO of these patent applications.

This program applies to all pending applications and reexamination proceedings (reexams).

As a program to assist in processing of patent applications and patents undergoing reexamination, it is intended to ensure that the examination standards and guidelines are applied properly to such applications and reexams that include sensitive or noteworthy subject matter.

As an information gathering system, the SAWS program should identify applications and reexams that, if issued as a patent or reexamination certificate, would be controversial or noteworthy.

The initial identification of SAWS applications/reexams is performed by the examiners (may also include managers and classifiers). Therefore, it is important that examiners stay informed about this program and the identification criteria.

**Independent of the SAWS program, examiners are encouraged to bring to their supervisor's attention any application/reexam that raises issues that they are uncertain how to handle.** Supervisors are responsible for determining which applications/reexams proceed through the SAWS program versus those applications/reexams having other issues which are normally addressed by existing examination procedures and established examination/re-examination guidelines.

### **II. OPERATIONAL OVERVIEW:**

TC 2800 handles the SAWS program based upon a tiered process of application/reexams identification. This process relies on Examiners and SPEs to identify these applications/reexams, and a SAWS screening committee to verify their status. The SAWS screening committee comprises the home SPE, at least one of the following managers in the TC 2800 Quality Center:



## Management Guidelines for Sensitive Application Warning System (SAWS) Program

- 2 -

Cassandra Spyrou, Clayton LaBalle and Hien H. Phan, and another TC 2800 management official.

Applications/Reexams which have been identified and verified as containing SAWS material are reported the TC Directors, and as needed, a SAWS memorandum is forwarded to the Deputy Commissioner for Patent Operations and the Deputy Commissioner for Patent Examination Policy prior to allowance or forwarded to the Board of Patent Appeals and Interferences (BPAI) when an appeal is forwarded to the jurisdiction of the BPAI.

### A. Technology Center 2800 Practice:

1. Examiners are the first line of review since they are the most knowledgeable about the pending claims and application/reexamination issues. Examiners will report potential SAWS applications/reexams to their SPE. Upon approval of the SPE, the case will be brought by the SPE to Clayton LaBalle, Cassandra Spyrou or Hien H. Phan for entering the SAWS application/reexam number into the TC 2800 tracking system.
2. Flagging an identified SAWS application/reexam in PALM to ensure that the application/reexam cannot be allowed or an NIRC issued until the flag has been removed.
3. TC 2800 has established a screening mechanism to remove non-SAWS applications/reexams from their SAWS designation. This screening mechanism permits a second review and will result in a recommendation as to whether the application/reexam contains SAWS subject matter. The SAWS screening committee will perform the second screening review.
4. Applications/reexams that have been through the TC screening mechanism and have been identified as SAWS applications/reexams will be brought to the attention of the TC Directors. The TC Director will bring them to the attention of the Deputy Commissioner for Patent Operations and the Deputy Commissioner for Patent Examination Policy.
5. For uniformity and process improvements, a SPRE, QAS, or a SAWS TC-screening committee must be utilized. A SPRE, QAS, or a SAWS TC-screening committee will be tasked to periodically review the SAWS processing guidelines and criteria to continually update and revise the program as needed.
6. Placing a PALM Flag on subject classes, which encompass sensitive subject matter until a review of these cases is performed upon allowance (such as business methods, class 705).
7. A reminder and an updated SAWS criteria list will be distributed, at least semi-annually, to examiners to stress the importance of SAWS application identification. All newly hired examiners should be made aware of this TC 2800 SAWS program.

## Management Guidelines for Sensitive Application Warning System (SAWS) Program

- 3 -

### **B. Subject matter of special interest in TC 2800**

1. Perpetual motion machines; classes 310 and 290
2. Anti-gravity devices
3. Room temperature superconductivity; class 310
4. Free energy – Tachyons, etc.
5. Gain-Assisted Superluminal Light Propagation (faster than the speed of light); class 702, 359
6. Other matters that violate the general laws of physics; classes 73, 290.
7. Applications containing claims to subject matter which, if issued, would generate unfavorable publicity for the USPTO, class 84, 702.
8. Reexamination proceedings involving patents in litigation and:  
The court decision/verdict is subject to review by the Supreme Court  
The court decision includes high monetary awards  
The technology and companies involved would likely generate high publicity

### **C. Corps-wide Potential SAWS subject Matter**

1. Applications with a very old effective filing date (pre-Gatt – before June 8, 1995) with broad claim scope.
2. Application with pioneering scope.
3. Applications dealing with inventions that, if issued, would potentially generate extensive publicity.
4. Applications with objectionable or derogatory subject matter,
5. Applications with inventions that would harm people or the environment, compromise national security or public safety.
6. Director's Ordered reexams except those ordered due to failure to considered timely filed prior art or due to prior art citation under 37 CFR §1.501.



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Defense Intelligence Agency

## *Defense Analysis Report*

DIA-08-0911-003

13 November 2009

### **Technology Forecast: Worldwide Research on Low-Energy Nuclear Reactions Increasing and Gaining Acceptance**

*Scientists worldwide have been quietly investigating low-energy nuclear reactions (LENR) for the past 20 years. Researchers in this controversial field are now claiming paradigm-shifting results, including generation of large amounts of excess heat, nuclear activity and transmutation of elements.<sup>1,2,3</sup> Although no current theory exists to explain all the reported phenomena, some scientists now believe quantum-level nuclear reactions may be occurring. DIA assesses with high confidence that if LENR can produce nuclear-origin energy at room temperatures, this disruptive technology could revolutionize energy production and storage, since nuclear reactions release millions of times more energy per unit mass than do any known chemical fuel.<sup>4,5</sup>*

#### **Background**

In 1989, Martin Fleischmann and Stanley Pons announced that their electrochemical experiments had produced excess energy under standard temperature and pressure conditions.<sup>6</sup> Because they could not explain this physical phenomenon based on known chemical reactions, they suggested the excess heat could be nuclear in origin. However, their experiments did not show the radiation or radioactivity expected from a nuclear reaction. Many researchers attempted to replicate the results and failed. As a result, the physics community disparaged their work as lacking credibility, and the press mistakenly dubbed it "cold fusion." Related research also suffered from the negative publicity of cold fusion for the past 20 years, but many scientists believed something important was occurring and continued their research with little or no visibility. For years, scientists were intrigued by the possibility of producing large amounts of clean energy through LENR, and now this research has begun to be accepted in the scientific community as reproducible and legitimate.

#### **Source Summary Statement**

This assessment is based on analysis of a wide body of intelligence reporting, most of which is open source information including scientific briefings, peer-reviewed technical journals, international scientific conference proceedings, interviews with scientific experts and technical media. While there is little classified data on this topic due to the S&T nature of the information and the lack of collection, DIA judges that these open sources generally provide the most reliable intelligence available on this topic. The information in this report has been corroborated and reviewed by U.S. technology experts who are familiar with the data and the international scientists involved in this work.

Although much skepticism remains, LENR programs are receiving increased support worldwide, including state sponsorship and funding from major corporations.<sup>7,8,9,10</sup> DIA assesses that Japan and Italy are leaders in the field, although Russia, China, Israel, and India<sup>11</sup> are devoting significant resources to this work in the hope of finding a new clean

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energy source. Scientists worldwide have been reporting anomalous excess heat production, as well as evidence of nuclear particles<sup>12, 13, 14</sup> and transmutation.<sup>15, 16, 17</sup>

- Y. Iwamura<sup>18</sup> at Japan's Mitsubishi Heavy Industries first detected transmutation of elements when permeating deuterium through palladium metal in 2002.
- Researchers led by Y. Arata at Osaka University in Japan<sup>19</sup> and a team led by V. Violante at ENEA in Italy (the Italian National Agency for New Technologies, Energy, and the Environment—the equivalent to the U.S. Department of Energy)<sup>20</sup> also made transmutation claims.
- Additional indications of transmutation have been reported in China, Russia, France, Ukraine, and the United States.<sup>21, 22</sup>
- Researchers in Japan, Italy, Israel, and the United States have all reported detecting evidence of nuclear particle emissions.<sup>23, 24</sup>
- Chinese researchers described LENR experiments in 1991 that generated so much heat that they caused an explosion that was not believed to be chemical in origin.<sup>25</sup>
- Japanese, French, and U.S. scientists also have reported rapid, high-energy LENR releases leading to laboratory explosions, according to scientific journal articles from 1992 to 2009.<sup>26, 27</sup>
- Israeli scientists reported in 2008 that they have applied pulsating electrical currents to their LENR experiments to increase the excess energy production.<sup>28</sup>
- As of January 2008, India was reportedly considering restarting its LENR program after 14 years of dormancy.<sup>29</sup>

U.S. LENR researchers also have reported results that support the phenomena of anomalous heat, nuclear particle production, and transmutation.<sup>30, 31, 32</sup>

- At the March 2009 American Chemical Society annual meeting, researchers at U.S. Navy SPAWAR Pacific reported excess energy,<sup>33</sup> nuclear particles,<sup>34</sup> and transmutation,<sup>35, 36</sup> stating that these effects were probably the result of nuclear reactions.<sup>37</sup>
- A research team at the U.S. company SRI International has been studying the electrochemistry and kinetics of LENR since the early 1990's, reporting excess heat and helium production.<sup>38</sup>

## UNCLASSIFIED

- In May 2002, researchers at JET Thermal in Massachusetts reported excess heat and optimal operating points for LENR manifolds.<sup>39</sup>
- Researchers at the China Lake Naval Air Warfare Center in California first reported anomalous power correlated with Helium-4 production in 1996.<sup>40</sup>

Although no one theory currently exists to explain all the observed LENR phenomena, some scientists now believe these nuclear reactions may be small-scale deuterium fusion occurring in a palladium metal lattice.<sup>41, 42, 43</sup> Some others still believe the heat evolution can be explained by non-nuclear means. Another possibility is that LENR may involve an intricate combination of fusion and fission triggered by unique chemical and physical configurations on a nanoscale level.<sup>44, 45</sup> **This body of research has produced evidence that nuclear reactions may be occurring under conditions not previously believed possible.** Recent results suggest these anomalous LENR phenomena can be triggered by various energetic stimuli (electric and magnetic fields, acoustic waves, infrared, lasers)<sup>46, 47</sup> and may have a variety of operational modes.

### Nuclear Fusion

Nuclear fusion as currently understood occurs only in the core of stars, in nuclear weapons, in high temperature plasmas, or in inertially confined high-energy collisions. Scientists for years have attempted to harness nuclear fusion through high-temperature plasma techniques but have been unable to produce more energy output than supplied. Fusion was once thought to be the answer to the world's future clean energy needs, but after 60 years of research still has yet to live up to this promise. "Hot" fusion researchers do not believe fusion can occur at near-room temperatures based on the Coulomb barrier that repels like nuclear charges and have dismissed much of the "cold fusion" research conducted since 1989. As a result, such research has received limited funding and support over the past 20 years.

### Potential Applications of LENR: The Technology Surprise Factor

LENR's potential as a future clean energy source is still unknown. However, recent results indicating nuclear activity and transmutation are intriguing and pose the following questions:

- If the excess heat from these experiments could be captured and intensified, could LENR be used as a power source for engines, batteries, or other equipment?
- If nuclear particles could be generated and transmute elements, could LENR be used to mitigate hazardous waste or to neutralize weapons of mass destruction?<sup>48</sup>
- If the various modes of energy production could be identified and optimized, could LENR be used to create designer materials or critical resources that are in short supply or serve as a tailored, "dial-a-mode" power source?

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### Who's Hot in Cold Fusion?

The countries with the most advanced LENR programs are Japan, Italy, and Israel. In addition, Russia, France, China, South Korea, and India are spending significant resources on LENR research. The following are among the most notable efforts:

- In Japan, Iwamura at Mitsubishi has been studying transmutation of elements in LENR experiments and multilayer palladium (Pd) complexes. His team includes the Japanese Synchrotron Radiation Research Institute and SPring-8 at Riken. Kitamura and other researchers at Kobe University are investigating Pd nanopowders and Helium-4 ash. Arata at Mitsubishi Heavy Industries has worked on catalysts containing nanopalladium. Yamaguchi at Kobe noted transmutation using multilayered Pd samples. Mizuno at Hokkaido is studying transmutations and heat generation. A team led by Hioki at Toyota is investigating deuterium gas permeation through Pd as well as transmutations. Toriyabe at Tohoku University is developing charged-particle detectors for LENR. Kasagi is looking at electron and ionic screening in LENR effects.
- Vittorio Violante, a leader in the field of Pd metallurgy and the role of surface effects in LENR, heads a team at ENEA, Frascati Rome, (the Italian equivalent to the U.S. Department of Energy) performing LENR experiments. A team led by Francesco Celani at INFN that includes STMicroelectronics and Pirelli labs is studying deuterium migration in nanocoated Pd for fast-loading and anomalous heat effects. The Italian Physical and Chemical Societies are supporting LENR research in Italy.
- Srinivasan in India noted that India is restarting its LENR program: the Bhabha Atomic Research Centre had several groups working on LENR from 1989 to the early 1990s. Sinha at IISc in Bangalore is studying models for fusion in metal deuterides. Lakshmanan at Saveetha College is exploring fusion in sodium metal solutions.
- Andrei Lipson and other researchers at the Russian Academy of Sciences and scientists in Tomsk are studying the emission of charged particles during the use of electron beams to excite palladium/deuterium (Pd/D) and titanium/deuterium (Ti/D) targets. Karabut and others at LUCH also are conducting LENR experiments. A Dubna team led by Gareev is studying nuclear fusion during cavitation and molecular transitions. LUCH's Savvatimova, Dash, Muromtsev, and Artamonov also are conducting LENR experiments. Adamenko and Vysotskii of Kiev are looking for magnetic monopoles in LENR experiments. Kurchatov-based scientist Goryachev is investigating LENR for alternative energy sources and for mitigating radioactive waste.
- Xing Z. Li at Tshinghua University claims 20 institutions in China are investigating LENR with governmental support. Tian's team at Cahnchun University of Science and Technology is investigating laser triggering in Pd/D systems. Zhang and other researchers at the Chinese Academy of Sciences have studied Pd-D kinetics in LENR since 1991.
- Israeli scientists at Energetics in Omer have shown that variations in energy output can be increased using variable frequency or pulsed "superwaves" to stimulate LENR effects.
- The French Atomic Energy Agency had an official LENR program from 1997 to 1999. EDF also had one for several years. Currently, Jean-Paul Biberian from the Universite Marseille and Jacques Dufour at CNAM are working on LENR in France.
- Jan Marwan of Dr. Marwan Chemie in Berlin, Germany, is studying the nanostructure of palladium hydride systems. Huke and others from the Technische Universitat Berlin are working with Czerski in Poland and Ruprecht in Canada on electron screening mechanisms for deuteron fusion.

## UNCLASSIFIED

### Outlook and Implications

If nuclear reactions in LENR experiments are real and controllable, DIA assesses that whoever produces the first commercialized LENR power source could revolutionize energy production and storage for the future. The potential applications of this phenomenon, if commercialized, are unlimited. The anomalous LENR effects seen in these metal lattices containing deuterium may also have as-yet undetermined nanotechnology implications. LENR could serve as a power source for batteries that could last for decades, providing power for electricity, sensors, military operations, and other applications in remote areas, including space. LENR could also have medical applications for disease treatment, pacemakers, or other equipment. Because nuclear fusion releases **10 million times more energy per unit mass** than does liquid transportation fuel, the military potential of such high-energy-density power sources is enormous. And since the U.S. military is the largest user of liquid fuel for transportation, LENR power sources could produce the greatest transformation of the battlefield for U.S. forces since the transition from horsepower to gasoline power.

Prepared by: Beverly Barnhart, DIA/DI, Defense Warning Office. With contributions from: Dr. Patrick McDaniel, University of New Mexico; Dr. Pam Mosier-Boss, U.S. Navy SPAWAR/Pacific; Dr. Michael McKubre, SRI International; Mr. Lawrence Forsley, JWK International; and Dr. Louis DeChiaro, NSWC/Dahlgren.

Coordinated with DIA/DRI, CPT, DWO, DOE/IN, US Navy SPAWAR/Pacific and U.S. NSWC/Dahlgren, VA.

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<sup>1</sup> Bockris, John. "The History of the Discovery of Transmutation at Texas A&M University," paper presented at the 10<sup>th</sup> International Conference on Cold Fusion (ICCF), Cambridge, MA, 2003.

<sup>2</sup> 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.

<sup>3</sup> The number of protons in the nucleus of an atom determines the identity of the chemical element. Nuclear transmutation occurs when the number of protons in the nucleus is changed by adding or removing protons or converting them to other nuclear particles. Thus transmutation changes one chemical element into another through a nuclear process.

<sup>4</sup> Benedict, M., T. Pigford, and H. Levi. "Nuclear Chemical Engineering." McGraw Hill Series in Nuclear Engineering, 1981.

<sup>5</sup> Hecker, S., "Plutonium, A Historical Overview," *Challenges in Plutonium Science*, Vol. 1, Los Alamos, National Laboratory, No. 26, 2000.

<sup>6</sup> Journal of Electroanalytical Chemistry, Vol. 261, 263, 287, pp 187, 301, 293.

<sup>7</sup> DeChiaro, Louis, "Recent Progress in Low Energy Nuclear Reactions," briefing prepared by NAVSEA, Dahlgren, for DDR&E, 28 August, 2009.

<sup>8</sup> Iwamura, Yashiro, et al., "Transmutation Reactions Induced by D<sub>2</sub> Gas Permeation Through Pd Complexes (Pd/CaO/Pd)," 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.

<sup>9</sup> Hioki, Tatsumi, et al., "Influence of Deuterium Gas Permeation on Surface Elemental Change of Ion-Implanted Pd," 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.

<sup>10</sup> Celani, Francesco, et al., "Deuteron Electromigration in Thin Pd Wires Coated with Nano-Particles: Evidence for Ultra-Fast Deuterium Loading and Anomalous, Large Thermal Effects," 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.

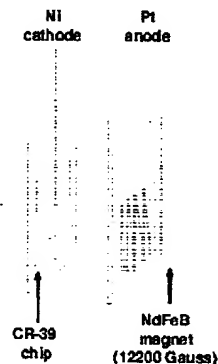
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- If rapid, explosive energy output can occur in one or several modes, could LENR serve as a new high-energy-density explosive?

International LENR research was highlighted in April 2009 on a U.S. television program focused on the 20th anniversary of the Fleischman and Pons announcement.<sup>49</sup> Many U.S. researchers are collaborating with foreign scientists, but each team has proprietary aspects of their experiments that are not shared. Because some peer-reviewed journals are reluctant to review or publish LENR data due to past controversies, most results are presented at international conferences, and foreign scientists have access to much of the U.S. data. In addition, U.S. experts have been invited to brief on LENR to nuclear institutes in India,<sup>50</sup> Belgium,<sup>51</sup> and South Korea,<sup>52</sup> and a reciprocal visit by South Koreans to SPAWAR Pacific to initiate collaboration is planned. This relatively free flow of information increases the likelihood of a technology breakthrough—as well as the potential for technology surprise—by an international team, especially those from countries that are devoting more resources to this research than is the United States, and are supported with major corporate funding (Mitsubishi, Toyota, and Honda in Japan; Pirelli in Italy).<sup>53</sup>

### The Experiments

Most LENR experiments involve electrodes immersed in solutions of metal salts such as lithium chloride or lithium sulfate, with heavy water substituted for natural water. Electric current is sent through the experimental apparatus, in most instances producing excess heat. This effect occurs over long periods (several hundreds of hours), and many early experimenters achieved negative results because they were unaware of this incubation period. Israeli researchers used pulsating electric fields to increase heat production. The application of magnetic fields has been shown to stimulate increased heat and power. Usually one of the electrodes is palladium, because it has a high ability to adsorb (hold on the surface) and absorb deuterium atoms in its metal matrix. Deuterium is an isotope of hydrogen that undergoes fusion in nuclear weapons at high temperatures and pressures; it also undergoes fusion and is one of the basic building blocks of the heavier elements formed in stars. The Navy SPAWAR experiments used a unique technique to place the palladium atoms in the heavy-water solution and to codeposit palladium and deuterium, which rapidly increases the deuterium "loading" necessary for the LENR phenomena to occur.



A Notional LENR Electrochemical Cell (Left) and a French LENR Apparatus After an Unexplained Explosion (Right)<sup>54</sup>



- <sup>11</sup> "Exciting New Science: Potential Clean Energy," Abstracts, 14<sup>th</sup> International Conference on Condensed Matter Nuclear Science and International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>12</sup> Mosier-Boss, et al. "Triple Tracks in CR-39 as the Result of Pd/D Co-deposition: Evidence of Energetic Neutrons," *Naturwissenschaften*, 96, 2009, 135-142.
- <sup>13</sup> Mosier-Boss, et al., Navy SPAWAR briefing, American Chemical Society annual meeting, March 2009.
- <sup>14</sup> "Exciting New Science: Potential Clean Energy," Abstracts, 14<sup>th</sup> International Conference on Condensed Matter Nuclear Science and International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>15</sup> Transmutations only occur when nuclear particles interact and are exchanged to produce different elements.
- <sup>16</sup> Iwamura, Yashiro, et al., "Transmutation Reactions Induced by D<sub>2</sub> Gas Permeation Through Pd Complexes (Pd/CaO/Pd) 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>17</sup> Yamaguchi, Tatsuya, et al., "Investigation of Nuclear Transmutation Using Multilayered CaO/X/Pd Samples Under Deuterium Permeation," 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>18</sup> Iwamura, Yashiro, et al., "Elemental Analysis of Pd Complexes: Effects of D<sub>2</sub> Gas Permeation," *Japan Journal of Applied Physics*, Vol 41, 2002, pp. 4642-4650.
- <sup>19</sup> Arata, Y., "Anomalous Effects in Charging of Pd Powders with High Density Hydrogen Isotopes," *Physics Letters A*, 373, 2009, pp 3109-3112.
- <sup>20</sup> Violante, V. et al., "On the Correlation of PdD Alloy Material Properties with the Occurrence of Excess Power," briefing presented at 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>21</sup> Prelas, M.A., et al., "A review of Transmutation and Clustering in Low Energy Nuclear Reactions," briefing presented at Vice Chancellor for Research Seminar on LENR, University of Missouri, May 2009.
- <sup>22</sup> Briefings presented at Navy SPAWAR San Diego, LENR meeting, 4-5 August, 2009.
- <sup>23</sup> Mosier-Boss, et al. "Triple Tracks in CR-39 as the Result of Pd/D Co-deposition: Evidence of Energetic Neutrons," *Naturwissenschaften*, 96, 2009, 135-142.
- <sup>24</sup> Mizuno, Tadahiko, "Neutron Emission Induced by Nuclear Reaction in Condensed Matter," briefing presented at Vice Chancellor for Research Seminar on LENR, University of Missouri, May 2009.
- <sup>25</sup> Zhang, et al., "On the Explosion in a Deuterium/Palladium Electrolytic System," Third International conference on Cold Fusion, 1992, Nagoya, Japan.
- <sup>26</sup> Biberian, Jean-Paul, "Unexplained Explosion During an Electrolysis Experiment in an Open Cell Mass flow Calorimeter," *Journal of Condensed Matter, Nuclear Science*, 2 (2009) pp. 1-6.
- <sup>27</sup> Zhang, et al., "On the Explosion in a Deuterium/Palladium electrolytic System," Third International conference on Cold Fusion, 1992, Nagoya, Japan.
- <sup>28</sup> Lesin, et al., "Ultrasonically-Excited Electrolysis Experiments at Energetic Technologies," *Energetics Technologies*, Omer, Israel, briefing presented at 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008
- <sup>29</sup> Jayaraman, K.S., "Cold Fusion is Hot Again," *Nature India*, 2008, Published online 17 Jan 2008, <http://www.lenr-canr.org/acrobat/JayaramanKcoldfusion.pdf>
- <sup>30</sup> Mosier-Boss, et al., multiple briefings presented at Navy SPAWAR Pacific, August 4-5, 2009.
- <sup>31</sup> McKubre, Michael, "Studies of the Fleischmann-Pons Effect at SRI International," briefing presented at Vice Chancellor for Research Seminar on LENR, University of Missouri, May 2009.
- <sup>32</sup> Spzak, Stan, et al., "Evidence of Nuclear Reactions in the Pd Lattice," *Naturwissenschaften*, 92, 2005, 394-397.
- <sup>33</sup> Spzak, Stan, et al., "Thermal Behavior of Polarized Pd/D Electrodes Prepared by Co-Deposition," *Thermochemica Acta*, 410, 2004, 101-107.
- <sup>34</sup> Mosier-Boss, et al., "Triple Tracks in CR-39 as the Result of Pd/D Co-deposition: Evidence of Energetic Neutrons," *Naturwissenschaften*, 96, 2009, 135-142.
- <sup>35</sup> Spzak, Stan, et al., "Evidence of Nuclear Reactions in the Pd Lattice," *Naturwissenschaften*, 92, 2005, 394-397.
- <sup>36</sup> The identity of a chemical element is determined by the number of protons in its atomic nucleus. Transmutation occurs when one chemical element is changed into another one. This normally occurs during radioactive decay, but can occur from any number of nuclear processes that add or subtract protons from the atomic nucleus.
- <sup>37</sup> Mosier-Boss, et al., Navy SPAWAR briefing, American Chemical Society annual meeting, March 2009.
- <sup>38</sup> McKubre, Michael, "Studies of the Fleischmann-Pons Effect at SRI International," briefing presented at Vice Chancellor for Research Seminar: Excess Heat and Particle Tracks from Deuterium-Loaded Palladium, University of Missouri, 29 May 2009.

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- <sup>39</sup> Swartz, Mitchell, et al., "The Impact of Heavy Water (D<sub>2</sub>O) on Nickel-Light Water Cold Fusion Systems," Proceedings of the 9<sup>th</sup> International Conference on Cold Fusion, ICCF-9, Condensed Matter Nuclear Science, May 19-24, 2002, Beijing, China, Tsinghua University Press, 2003, pp 335-342.
- <sup>40</sup> Miles, Melvin, et al., "Anomalous Effects in Deuterated Systems," Final Report, NAWCWPNS TP 8302, Naval Air Warfare Center Weapons Division, 1996.
- <sup>41</sup> Hagelstein, Peter and Irfan Chaudhary, "Modeling Excess Heat in the Fleischmann-Pons Experiment," briefing presented at Vice Chancellor for Research Seminar on LENR, University of Missouri, May 2009.
- <sup>42</sup> Olenik, V.P. and Yu. D. Arepjev, "Physical Mechanism of Nuclear Reactions at Low Energies," National Technical University of Ukraine, Kiev Polytechnic Institute
- <sup>43</sup> Srivastava, Y.N., O. Panella, A. Widom, "Instability of the Perturbation Theoretical Chromodynamic Vacuum," LANL web site, arXiv:0811.3293v1 20 Nov 2008.
- <sup>44</sup> Hagelstein, Peter, MIT, Briefing, Navy SPAWAR Pacific, August 2009..
- <sup>45</sup> McDaniel, Patrick, "Electrochemically Induced Nuclear Reactions," briefing, presented at Navy SPAWAR Pacific, August 2009.
- <sup>46</sup> Sinha, K.P. and A.Meulenberg, "Laser Stimulation of Low-Energy Nuclear Reactions in Deuterated Palladium," Current Science, Vol.91, No.7, 10 October, 2006, pp. 907-912
- <sup>47</sup> Lesin, et al., "Ultrasonically-Excited Electrolysis Experiments at Energetic Technologies," Energetics Technologies, Omer, Israel, briefing presented at 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>48</sup> Tsvetkov., S.A., "Possibility of Using Cold Fusion for Nuclear Waste Products Transmutation," 10<sup>th</sup> International Conference on Cold Fusion, Cambridge, MA, 2003, from LENR-CANR.org website.
- <sup>49</sup> <http://www.cbsnews.com/stories/2009/04/17/60minutes/main4952167.shtml?tag=contentMain:contentBody>
- <sup>50</sup> Personal correspondence, Dr. Michael McKubre, SRI International, October, 2009.
- <sup>51</sup> Forsley, L., "Lattice Assisted Nuclear Reactions: Overview of an Unexpected Phenomena," First Colloquium on Nano-Nuclear Science l'Universite catholique de Louvain, Belgium, May 4-5, 2009.
- <sup>52</sup> Personal correspondence, Mr. Lawrence Forsley, JWK International, October, 2009.
- <sup>53</sup> In Japan, the three major automakers are supporting LENR research. In Italy, Pirelli Labs is one of many corporate and governmental sponsors of LENR research.
- <sup>54</sup> Biberian, Jean-Paul, "Unexplained Explosion During an Electrolysis Experiment in an Open Cell Mass flow Calorimeter," *Journal of Condensed Matter, Nuclear Science*, 2 (2009) pp. 1-6.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE THE APPLICATION OF:

Inventor : Mitchell R. Swartz

Serial no. 07/ 371,937

Filed: 06/27/89

For: SYSTEMS TO MONITOR AND  
ACCELERATE ELECTROCHEMICALLY  
INDUCED NUCLEAR FUSION REACTIONS  
WITHIN A MATERIAL

PAPER:

Group Art Unit:2204

Examiner: D. Wasil

**Declaration of Dr. Eugene F. Mallove**

Commissioner of Patents and Trademarks  
Washington, D.C. 202312

1. I, Eugene F. Mallove, declare that I am a citizen of the United States of America. I have earned the degree of Doctor of Science in Environmental Health Sciences from Harvard University [1975], as well as two degrees from the Massachusetts Institute of Technology [Master of Science and B.S. in Aeronautical and Astronautical Engineering (1969, 1970)].

2. I have worked as an engineer and scientist for more than fifteen years in the fields of aeronautical engineering, space propulsion, astrodynamics, inertial navigation, celestial mechanics, planetary physics, space communication and physics, coherent optical scattering and hydrogen isotope loading into various metals.

3. I am the Editor-in-Chief of the science and technology magazine "COLD FUSION," the premier edition of which is expected to appear on the newsstands by around April 1994. It is also available by subscription. In little over a month of solicitation, the magazine has acquired many dozens of subscribers from technical and industrial organizations.

4. I have published extensively, including in the field which the above-entitled invention resides. Furthermore I was the Chief Science Writer for the MIT News Office during the announcement of cold fusion in March 1989, and have followed the development of the field very closely since that time. My book in this field ("**Fire from Ice: Searching for the Truth Behind the Cold Fusion Furor**", John Wiley & Sons May 1991 (nominated for the Pulitzer Prize) has followed my other publications (as author or contributor) including **The Quickenning Universe: Cosmic Evolution and Human Destiny**, **The Starflight Handbook: A Pioneer's Guide to Interstellar Travel**, and contributions to the Physics Section of the **Almanac of Science and Technology** (San Diego). Other relevant background includes my programs with the Voice of America [United States Information Agency], and my contributions to MIT's **Technology Review**, **The Washington Post**, **The Planetary Report**, **Air & Space**, and **Sky & Telescope**.

5. I have studied the Examiner's cited reference (Huizenga) and the arguments presented below. I hereby respectfully submit that these statements and opinions of the Office are incorrect.

6. The Examiner states that cold fusion does not exist; that it is "an unproven concept".

*"The invention is considered as being based on the "cold fusion" concept. This concept relies on the incorporation of a hydrogen isotope (deuterium) into a metal host (e.g., palladium) at a relatively low (cold) temperature for nuclear energy generation, such as the type disclosed by appellant. However, as set forth more fully below, this "cold fusion" concept is still no more than just an unproven concept."*

[Appeal Brief of Examiner Wasil, undated, mailed January 13, 1994]

7. The Examiner is incorrect in a reliance upon the text by Dr. John R. Huizenga, entitled **Cold Fusion: Scientific Fiasco of the Century**, [University of Rochester Press, 1992].

*"For example note Huizenga (Cold Fusion : The Scientific Fiasco of the Century, 1992). Huizenga was Co-Chairman of the United States Department of Energy - Energy Research Advisory Board Cold Fusion Panel which investigated "cold fusion" issue. Huizenga concluded that there is a lack of convincing evidence concerning neutron generation/nuclear fusion reactions of the "cold fusion" type."*

[Appeal Brief of Examiner Wasil, undated, mailed January 13, 1994]

8. Attention is directed to the simple fact that Dr. Huizenga ignores essentially all the positive evidence for cold fusion. Dr. Huizenga leaves out virtually everything after 1989. Dr. Huizenga says nothing about the confirming, yet ultra-cautious, cold fusion work carried out at the conservative Electric Power Research Institute. The evidence cited by the Examiner shows that Dr. Huizenga denies that a major cold fusion effort is under way in Japan:

9. On the other hand, Dr. Huizenga neglects to mention the cold fusion controversy about the MIT PFC "negative" cold fusion experiment and the continuing contention regarding the California Institute of Technology "negative" cold fusion experiment. There exist considerable evidence that these studies have major problems, and may have in fact shown excess heat.

10. The continuing news of successful and provocative cold fusion research in Japan, \$12 million funding for cold fusion from the private Electric Power Research Institute (EPRI) in the U.S., and recently initiated multi-million dollar funding by the Japanese Ministry of International Trade and Industry (MITI) stands in complete contrast to what is reported in Huizenga. His two favored villains, Pons and Fleischmann, are hard at work at a laboratory in France funded by the Japanese Technova Corporation, and report having achieved reproducible boiling in cold fusion cells, which has vaporized all the heavy water electrolyte -- over and over again. Their latest calorimetry work has been independently reviewed by physicist Dr. Wilford N. Hansen, who finds it completely sound.

11. Spectacular results have regularly been reported in Japan in the cold fusion field -- from reproducible, million-neutron bursts in solid state fusion at the Nippon Telephone and Telegraph Laboratory (NTT -- the "Bell Laboratory" of Japan) to the work of hot fusion physicist Professor Akito Takahashi at Osaka University, who has been detecting cold fusion neutrons for the past three years; he recently has confirmed the continuous, correlated emission of neutrons and scores of watts of excess energy from a single cell for a sustained period of about three months.

12. Dr. Huizenga doesn't report any of the cold fusion evidence. He says that every bit of it can be characterized in two words -- "pathological science." He says that all these hundreds of scientists in over a dozen countries still working or interested in cold fusion are deluded with "pathological science".

Excess heat in cold fusion experiments is illusory, says Huizenga.

Tritium generation found by over 40 cold fusion groups is a vast mistake, says Huizenga. However, the facts appear to contradict Dr. Huizenga, and many are listed in my book on pages 246-248.

13. Huizenga's opinion of cold fusion at the very outset of the controversy is documented in **Cold Fusion: Scientific Fiasco of the Century**. In describing his appointment to head the ERAB panel, Huizenga explicitly declared his bias:

*"My initial feeling was that the whole cold fusion episode would be short-lived and that it would be wise to delay appointing such a panel."*

(Huizenga, **Cold Fusion: Scientific Fiasco of the Century**, p.42)

14. Many other things are mysteriously missing from **Cold Fusion: Scientific Fiasco of the Century**. Although the group is mentioned by name, we read nothing of the pioneering work of Dr. Michael McKubre and his EPRI-funded group at SRI in Menlo Park, California. This team is widely acknowledged to have done some of the most careful cold fusion calorimetry in the world. It is unconscionable Dr. for Huizenga not to discuss Dr. McKubre's and so much other positive work.

15. Dr. Huizenga devotes only one paragraph to the 2nd Annual Conference on Cold Fusion in Como, Italy, held in July, 1991. He says nothing about the new findings that were presented there, which were numerous and impressive. In fact, world-class electrochemist Dr. Heinz Gerischer of the Max Planck Institute

attended the conference as a skeptic; he left convinced that nuclear reactions at some level were, indeed, occurring in metal lattices. Later Dr. Gerischer wrote in a memo to the German government:

**"The fact that in the Republic of Germany this work has been inhibited is no longer justified. It could, later on, be regarded as a very unfortunate gap in German research when compared with the present activity in other countries and particularly in Japan."**

16. Another incorrect statement appears in Huizenga on page 171:

*"The lack of papers [at the first annual conference, 1990] from Japan was inconsistent with propaganda from Utah and from stories written by selected reporters claiming spectacular advances in cold fusion by the Japanese." And, "...cold fusion after one year was essentially a United States phenomenon, except for pockets of activity in India and Italy."*

**[Huizenga, Cold Fusion: Scientific Fiasco of the Century]**

This is completely untrue and Huizenga could easily have learned this before his book came out. Many major Japanese universities, and quite a few Japanese industrial firms, have on-going research in cold fusion that is accelerating.

17. Huizenga is thus very selective in his presentation of the facts. The Final Report of the Utah National Cold Fusion Institute (1991) was available to him and contains clear descriptions of reproducible tritium generation in experiments by the ultra-cautious electrochemist Dr. Fritz Will (who was less convinced about the nuclear explanation for excess heat).

18. In addition, although Huizenga states:

*"There has been no sign of this growth of understanding of cold fusion either in the production of fusion products or excess heat."*

**[Huizenga, Cold Fusion: Scientific Fiasco of the Century]**

However, it is well known and reported in the open literature that McKubre's groups, and others, have achieved near reproducible excess power in cold fusion cells. Many the groups have recently stated that achieving high levels of deuterium-to-palladium atom loading (D/Pd ratio) were key to provoking the phenomena. Therefore any system to monitor the loading would have utility.

Declaration of Dr. Eugene F. Mallove      Serial no: 07/871,087      Page 6

20. The ICCF-4 conference presented even more papers confirming both the existence and utility of this field. Excess heat was found by over two-dozen research groups. Startling nuclear effects were found by many others: low level neutron emissions, tritium, helium-4, charged particles, and even isotope changes and element transmutations that could be seen by gamma ray spectroscopy, among other convincing tests.

21. "COLD FUSION", of which I am the editor, joins several journals and newsletters already in this field which continuously publish new papers showing positive results. These include **FUSION FACTS** and **COLD FUSION TIMES** which supplement **Fusion Technology**, and even now **Physics Letters A**, and the **Journal of Electroanalytical Chemistry**. The number of these publications is increasing, which demonstrates both the existence of and growth of this field.

I declare that all statements herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date:

Feb 6, 1994

Eugene F. Mallove

Dr. Eugene F. Mallove  
Editor, "COLD FUSION"  
Post Office Address  
171 Woodhill-Hookssett Rd.  
Bow, New Hampshire 03304  
603-228-4516



RESPONSE UNDER 37 CFR 1.116  
EXPEDITED PROCEDURE EXAMINING GROUP NUMBER 2204

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE THE APPLICATION OF:

Inventor : Mitchell R. Swartz  
Serial No.: 07/ 339,976  
Filed: 04/18/1989

SYSTEMS TO INCREASE THE EFFICIENCY,  
CONTROL, SAFETY AND ENERGY  
UTILIZATION OF ELECTROCHEMICALLY  
INDUCED FUSION REACTIONS

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

PAPER:

Group Art Unit: 2204

Examiner Anthony Chi

May 16, 1995

**DECLARATION OF HAL FOX  
SUPPORTING PETITION TO THE COMMISSIONER**

I, Hal Fox, declare that I am a citizen of the United States of America:

1. I have earned the degree of Bachelor of Science in physics and mathematics from the University of Utah in 1951, an M.B.A. from University of Utah in 1972, and continued post-graduate studies with numerous science and engineering courses.

2. My fields of experience include computation for scientists, fluid dynamics, missile systems, energy systems, and systems engineering. I am also familiar with the energy producing and energy conversion devices, including those in the field of cold nuclear fusion. I have worked with missile, energy and other engineering systems for more than thirty (30) years.

3. I served in the U.S. Air Force from 1951 to 1959. I have worked in industry including Hughes Aircraft company as a missile systems engineer, and have directed research at the Fluidonics Research Laboratory (University of Utah Research Park) in fluid dynamics, and most recently with F.E.A.T., Inc. (now ENECO).

4. I am a nationally recognized expert and considered an authority on developments in the field of cold fusion - from science and business points of view because I have worked in the cold fusion field with scientists, business people, engineers and others. I began F.E.A.T. (Future Energy Applied Technology) which eventually merged and became ENECO. I was cochairperson of the International

symposium on Cold Fusion and Advanced Energy Sources in Minsk, Belarus (May 1994), and have chaired sessions and/or presented papers at other international cold fusion symposia (including ICCF-4, ICCF-5, and other international conferences).

5. I have published extensively in the energy field. I have presented papers at several international symposia (including ICCF-4 and ICCF-5). I began publishing Fusion Facts (ISSN #1051-8738) in July 1989, and have been its editor for more than five years. I have edited and published New Energy News (ISSN #1075-0045) for two years. I have studied this field closely and published analysis as well as a compendium of all publications [H. Fox, M. Swartz, "PROGRESS IN COLD NUCLEAR FUSION = METANALYSIS USING AN AUGMENTED DATABASE", presented at ICCF-5, (1995); and H. Fox, Compendium Of The World Wide Cold Nuclear Fusion Literature distributed with "COLD FUSION IMPACT in the ENHANCED ENERGY AGE", Fusion Information Center, Utah, (1992). The book is now translated in four languages; publication pending in Spain and Germany.

6. I am familiar with many patent applications submitted to the United States Patent Office. I would estimate that I am acquainted with many inventors in the field of cold fusion who have applied for cold fusion patents or patents in the cold fusion field, including more than ten who have discussed their inventions with me.

7. It has been my observation that the U.S. Patent Office examiners have not used their access to professional literature on cold fusion such as Fusion Technology, Journal of Electroanalytical Chemistry and Nuovo Cimento; publications which were or should have been available to them in the Patent Office library. Instead they have relied on articles in the Washington Post, New York Times, and other newspapers. The fact that many patent agents have been unable to obtain patents on cold fusion and yet have been able to patent other types of inventions in the normal procedure is strong evidence that the patent examiners and/or their supervisors are not acting in good faith when the subject is cold fusion.

8. It has been my observation that when inventors have been reasonably diligent and have acted in good faith in response to usual disregard of inventor's normal rights, the examiners in the U.S. Patent Office have unreasonably rejected all responses and have made it extraordinarily difficult for any of the estimated 100 or more patent applications for many varieties of inventions regarding cold

nuclear fusion to be handled in a normal manner. Few other countries have denied cold fusion inventors the rights to the fruits of their ingenuity. The most telling evidence is the fact that scores of patents on cold fusion have issued in other countries (over one-third of all patents issued have been to Japanese inventors and assignees). By contrast almost no patents on cold nuclear fusion have been granted by the U.S. Patent Office. This observation is the strongest evidence that the examiners and their supervisors in the U.S. Patent Office are responsible for the flagrant denial of inventors rights granted under the Constitution of the United States.

9. The apparent lack of normal progress in the handling of cold fusion patent applications and the international issuance of cold fusion patents has been the subject of several articles and comments written by me and others and then published in the monthly newsletter Fusion Facts during the time from July 1989 to May 1995 (the most recent article).

10. The apparent lack of the use of normal procedures in the handling of cold fusion patents has placed an enormous financial burden on the inventors and have collectively denied the inventors of the United States and their assignees ~~and~~ the opportunities to enjoy economic advantages from their intellectual property rights. One end result has been the lost opportunities for United States citizens to be among the world's economic leaders in this new energy technology = despite most of the initial work beginning in the United States. The collective national economic losses might amount to billions of dollars in potential future sales revenues to U.S. businesses and enormous losses to U.S. inventors, investors, and citizens.

I declare that all statements herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: May 16, 1995



Hal Fox

Post Office Address: Fusion Information Center  
P.O. Box 58639  
Salt Lake City, UT 84158  
(801) 583-2963

A46

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE THE APPLICATION OF:

Inventor : Mitchell R. Swartz

Serial No.: 07/ 339,976

Filed: 04/18/1989

SYSTEMS TO INCREASE THE EFFICIENCY  
CONTROL, SAFETY AND ENERGY  
UTILIZATION OF ELECTROCHEMICALLY  
INDUCED FUSION REACTIONS

PAPER:

Group Art Unit: 2204

Examiner Anthony Chi

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**DECLARATION OF DANA R. ROTEGARD**

1. I, Dana Richard Rotegard, declare that I am a citizen of the United States of America. I have earned the degree of B.A. in Political Science and Music [Macalester, St. Paul], and continued graduate study in the fields of microeconomics, policy of the environment, and finance at the Humphrey Institute of the University of Minnesota. I have worked as a resource economist and have acted as the Chief Research Economist for the City of Minneapolis during ten year service there.

2. I am a writer in the fields of economic development, space science and cold fusion. My contributions include publications in, or editorial function for, **Space Power, Futurics, Space Markets** of Jane's Information Group, **Case for Mars III, Cold Fusion Times**, and **Fusion Facts**. I am a member and founder of the **Minnesota Cold Fusion Alliance**.

3. The Patent Office is reported to have the opinion that cold fusion does not exist, and that inventions in this area have no utility.

4. I submit that this statement and opinion of the Office is incorrect. Most of the negative authority cited by the Examiner has not approached cold fusion with a scientifically open mind. Furthermore, a number of the leading academic laboratories in the USA have replicated the original Fleischmann and Pons effect

DECLARATION OF DANAR ROTEGARD    Serial no. 67/ 339,976    Page 2

including the Texas A & M chemistry department, The University of Minnesota Materials Science and Chemical Engineering Department, Stanford Research International and others as documented by the bibliography supplied by the Fusion Information Center Inc. of Salt Lake City, Utah.

5. If only a few labs had reported success, then skepticism of cold fusion would be viable. Several research teams reported positive finding on the original Fleischmann Pons effect at the Fourth International Conference on Cold Fusion in December 1993. I submit that Occams razor would dictate that the phenomena is real and has been "reproduced" to the point of overkill.

6. Major research institutions, industrial corporations and established scientific journals of international repute have endorsed the reality of cold fusion and are acting to explore and benefit from this reality. The Electric Power Research Institute of Palo Alto, California, and the Japanese MITI have endorsed and are actively sponsoring cold fusion research. Toyota through its research arm IMRA is sponsoring cold fusion research in France and Japan. In short, major institutions that should have an interest in new energy science have decided that cold fusion is real and are acting on that judgement. In addition, major refereed journals such as Fusion Technology and Physics Letters A have published numerous positive cold fusion lab reports. These trends would lead a prudent person to conclude that there is substance to the research cited above. Therefore, developments and inventions in this area have great utility.

I declare that all statements herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date:

Postal Address:

A49

Dana Richard Rotegard

223 Ridgewood

Minneapolis, Minnesota 55403



DEPARTMENT OF THE NAVY  
NAVAL AIR WARFARE CENTER  
WEAPONS DIVISION  
CHINA LAKE, CALIFORNIA 93555-6001

IN REPLY REFER TO:  
12000  
474230D/125  
30 Apr 96

To whom it may concern:

I first met Dr. Mitchell Swartz at the Fourth International Conference on Cold Fusion at Maui, Hawaii in 1993. I was impressed by his analysis of calorimetric results from various laboratories. He has also done excellent work relating to the isotopic loading of deuterium into metal lattices. This field is complex and deserves further research support.

I have investigated anomalous effects in deuterated metals for the past 5 years. My work provides evidence for the anomalous product of excess heat and helium-4. However, these experiments have been very difficult to reproduce in any consistent manner. There are simply too many variables that we do not yet understand. In my opinion, the loading of deuterium into palladium is one of the key variables.

I would like to express my strong support for the work being conducted by Dr. Mitchell Swartz involving anomalous effects in deuterated metals. I hope that he can find the financial support that his research in this field deserves.

Sincerely,

*Melvin H. Miles*

MELVIN H. MILES  
NAWCWPNS Fellow

A49



DEPARTMENT OF THE AIR FORCE  
ROME LABORATORY (AFMC)  
HANSCOM AIR FORCE BASE, MASSACHUSETTS

18 April 1996

**CONFIDENTIAL**

To whom it may concern,

I would like to express my strong support for the work being conducted by Dr. Mitchell Swartz in the field of isotopic fuel loading of metal lattices. It is my professional as well as personal opinion that this field is real in spite of a lack of repeatability by most practitioners.

My responsibilities at Rome Laboratory include evaluating new material systems with potential importance for military applications. I am a senior scientist in the Electromagnetic Materials Division having completed my PhD in Materials Science from MIT in 1984. From 1985 until 1995 I was the U.S. representative to NATO, Panel III on Electromagnetic Materials where my duties were to establish collaborations among scientists in the seven member countries.

For example, in 1987 I was charged with the duty to survey the field of the new superconductors which were at first a great shock to experts in the field. I was selected for this work in part due to my M.S. thesis in the field of low temperature Physics. It is merely coincidental that my thesis topic was based on loading palladium alloys with hydrogen and deuterium and measuring the superconducting transition temperatures.

My two year survey concluded that the theoretical underpinnings of superconduction were sadly lacking. The BCS theory was not only incapable of predicting the occurrence of the YBCO materials, it was incapable of making a priori predictions for any arrangement of matter. This observation regarding the lack of understanding in low temperature physics is not widely known. This lack of first principles level of understanding has been of little concern to experimentalists and has not discouraged nine years of extensive research support.

Isotopic loading of metal lattices, on the other hand, has a stigma attached to it as a result of DOE sponsored committee reports issued in 1989 and 1990. Those reports were based on a similar, yet inferior knowledge base than which I observed in low temperature condensed matter systems. The early lack of reproducibility combined with the unfortunate early claims of Pons and Fleischman have combined to discredit this entire area of investigation. My Division would have been the natural home for study and support of these materials systems if events had unfolded differently.

I have known Mitchell Swartz since 1991 and believe his investigations are the most thorough and precise yet conducted in isotopic loading. His parametric relationships between loading and thermal output suggest specific strategies for scaling. I believe that the thermal effects he is observing are real and will ultimately be useful on a large scale. Please feel free to contact me for further discussions on these matters at: (617) 377-3776

*Brian S. Ahern*  
Brian S. Ahern

EM Materials Technology Division  
Electromagnetics & Reliability Directorate

ASO

## Kurzweil Technologies

Patents and Technology Assets  
Assessment, Development and Disposition

April 18, 1996

U.S. Patent Office  
Washington, D.C.

**EXHIBIT # B**

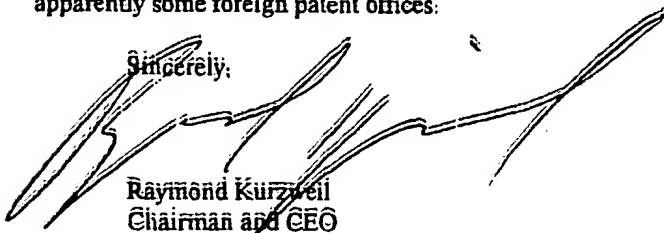
Gentlemen:

As a recognized inventor I would like to state my opinion. I was the principal developer of the first omni-font optical character recognition equipment, the first print-to-speech reading machine for the blind (the Kurzweil Reading Machine), the first CCD flat-bed scanner, the first commercially marketed large vocabulary speech recognition technology and other inventions in speech synthesis and recognition, and have served as technical advisor to companies such as Wang and Xerox. I have published extensively in the fields of artificial intelligence and health, and have received nine honorary Doctorates in science, engineering, music and humane letters. I have also received the 1994 Dickson Prize (Carnegie Mellon University's top science prize) and the Grace Murray Hopper Award from the Association for Computing Machinery, and was appointed Honorary Chairman for Innovation for the White House Conference on Small Business by President Reagan. I have been named Inventor of the Year (1988, by MIT and the Boston Museum of Science), and Engineer of the Year (1990, by Design News Magazine).

Energy, which the world obtains principally from the burning of fossil fuels is approximately a two trillion dollar per year industry comprising on the order of ten percent of the world's gross national product. Beyond its economic impact, the extraction, distribution and burning of fossil fuels has greatly and negatively affected the world's environment. Like many scientists around the world, I have examined Fleischman and Pons' reports carefully, and have not been quick to ride on the second and negative wave of cold fusion publicity. It is apparent to anyone who examines the data first hand that an energy producing process appears to have been discovered, and that it deserves further exploration.

I have known Dr. Swartz since 1966 when we met at the Massachusetts Institute of Technology and know him to be a serious engineer and physician. I have had the opportunity to examine some of his data in this field, including a visit to his research setup which involves loading an isotopic fuel into a material. The data from his research appears to be very promising and the potential impact of his work is enormously important. I think it is a mistake for the U.S. Patent Office to dismiss inventions related to "cold fusion" out of hand. This attitude is not consistent with the views of many serious scientists, and apparently some foreign patent offices.

Sincerely,



Raymond Kurzweil  
Chairman and CEO

ASI



**BOARD OF PATENT APPEALS AND INTERFERENCES  
FOR THE UNITED STATES PATENT  
AND TRADEMARK OFFICE**

---

Inventor : Mitchell R. Swartz  
Serial No.: 08-406,457  
Filed: 3/20/1995

Group Art Unit: 2204

Examiner: Daniel Wasil

For: **APPARATUS TO DETERMINE  
THE ACTIVITY OF A SAMPLE  
LOADED WITH ISOTOPIC FUEL**

---

**AFFIDAVIT OF SCOTT R. CHUBB, Ph.D.**

I, Scott R. Chubb, Ph.D., under oath and based on personal knowledge, depose and say as follows:

1. I reside in Burke, VA. I earned a Ph.D. and M.A. (Physics, State University of New York at Stony Brook, 1982, 1978), and a B.A. (Princeton, 1975). I have served as a Research Physicist at the Naval Research Laboratory since 1989 and National Research Council Fellow (1985-1988), and am now affiliated with Research Systems, Inc. and NRL. I am a solid state physicist and an inventor, and have published more than fifty papers in refereed journals concerning solid state physics, nonlinear dynamics, statistical physics, and nuclear physics. My expertise concerns the behavior of hydrogen in, and the transport of hydrogen through, metals.

2. I have read all of the relevant documents including the Board's Decision of July 29, 2001, and the original above-entitled application.

3. In this case, the patent office (PTO) has ignored the facts involving the present invention, such as the relevant scientific information associated with measuring activity of sample loaded with hydrogen and deuterium. The patent application provides a well-defined procedure, understandable by anyone skilled

in the art, that can be used to implement the invention. Enablement of the invention is documented through peer-reviewed literature that has been authored by inventor [Swartz, M., 1997, *Fusion Technology*, 31, 63-74. It is evident that the patent office has become recalcitrant, with its opinion in contradiction to existing evidence as promulgated through peer-reviewed literature.

4. Dr. Swartz has invented an important, new device, whose purpose has value for measuring activity of a sample. As an expert, skilled in the theory and practice of loading and transport of hydrogen in transition (and other) metals, I assert that the invention has definite utility, simply because the idea of using activity, as defined by the ratio of  $P[out]/P[in]$ , set forth in the invention has utility that transcends the immediate consequences associated with the attainment of the "cold fusion" effect which is seen with adequate hydrogen (and deuterium) loading and transport in palladium and other metals [Scott R. and Talbot A. Chubb, *Fusion Technology*, 24, 403, (1993); Talbot A. and Scott R. Chubb, *Fusion Technology*, 20, 93, (1991)]. The design and use of such a device measuring activity has immediate, important applications in the characterization of these kinds of systems for potential heat generation and other purposes. In particular, the transport of and behavior of H, D, and/or tritium in transition metal environments that have been subjected to the high strains, through electrolytic (as well as other) processes that are used to obtain the prerequisite loading conditions that are required in these experiments has definite importance for understanding the onset of the phenomena that have been attributed to the nuclear processes (associated with "cold fusion") but to more general problems associated with hydrogen-induced embrittlement and fatigue in transition metals, the transport of hydrogen into and away from transition metal hosts, and for other related purposes related to hydrogen storage, that have applicability in the development of novel, energy storage and retrieval devices.

5. The acts of the Patent Office are in violation of the Constitution, and are contrary to the advancement of the "progress of science and useful Arts." The patent office has ignored a wealth of information to the contrary including bona fide scientific exploration, sworn testimony, and significant evidence that any reasonable individual would accept. These acts have led to persecution, both indirectly and directly, inconsistencies in the literature, and have delayed relevant

science and technology. Thus, they clearly are in violation of the constitutional powers granted both by the Congress and by the Patent Office. These actions provide an additional example of an instance in which use of the name "cold fusion" has resulted in obfuscation of the relevant scientific facts, followed by actions which have resulted in further obfuscation of the relevant scientific debate. As guest editor of an ethics in science journal (*Accountability in Research*, v 8, issues #1,2 (Gordon and Breach, 2000), I recently compiled evidence from leading authorities on both sides of the debate, associated with the adjudication process. These authorities, and their associated collection of articles, reveal that not only have the claims not been adjudicated in a manifestly self-correcting fashion, but that the inadequacy of the process has resulted in a disruption of scientific and technological development.

6. As an expert on the history and adjudication of the associated controversy, I assert that the PTO has failed to distinguish between the very different sets of claims associated with measurements of high energy particles and those involving excess heat. In light of the associated confusion, the PTO has placed undue reliance on early expert opinions provided by individuals (Jones, Morrison, Huizenga, Taubes) that have no bearing either on the invention (which is related to heat measurements) or on its utility. Similarly, the opinion by Rothwell, which may be somewhat related to the invention, in point of fact, incorrectly cited by the PTO, deals only with a subsidiary issue involving Rothwell's preference for a different particular form of calorimeter. The quoted statement is entirely divorced from the key elements of the invention, which includes the usefulness of measurement of activity of a sample.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Scott R. Chubb, Ph.D.", written over a horizontal line.

Scott R. Chubb, Ph.D.

AS4

10586 Rookwood Dr.  
San Diego, CA 92131  
August 7, 2001

Mitchell Swartz  
PO Box 81135  
Wellesley Hills, MA 02481

Dear Mitchell:

I received your August 1 letter a few days after your telephone call.

I reread the discussion of cold fusion I wrote for the Scientific American "Ask the Experts" web site, <http://www.sciam.com/askexpert/physics/physics6.html>. I haven't read it since shortly after it was originally posted. I see that I wrote a history of cold fusion; a background on nuclear fusion; a brief summary of the electrolytic cold fusion experimental setup; and a presentation of some recent (late 1996) results. I wrote why cold fusion researchers think that their results are sound and perhaps why most mainstream scientists do not pay attention to them.

I do not see how anyone could construe anything that I wrote at Scientific American's site to imply that there is "no utility" in cold fusion, much less in instruments that might be used in cold fusion and other scientific experiments. I do not see how the United States Board of Patent Appeals arrived at such a conclusion from my writing.

It appears that the Board of Patent Appeals considers me an expert on this subject. As an expert, and based on your patent abstract contained in your letter, I would agree with you that your invention does have utility. You request that I help by "affirming that measuring the activity of a sample does have utility." I agree to try to help you in this regard.

Please understand, that anything I do with and for you in this context will be done on a private and personal basis. It will not involve either my employer nor its customers; nor will it imply any approval by them.

Yours,



Michael J. Schaffer  
personal: [schaffermj@yahoo.com](mailto:schaffermj@yahoo.com)  
home: (858) 530 1857

ASS

Page 1 of 2

**BOARD OF PATENT APPEALS AND INTERFERENCES  
FOR THE UNITED STATES PATENT  
AND TRADEMARK OFFICE**

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Inventor : Mitchell R. Swartz  
Serial No.: 08-406,457  
Filed: 3/20/1995

Group Art Unit: 2204

Examiner: Daniel Wasil

For: **APPARATUS TO DETERMINE  
THE ACTIVITY OF A SAMPLE  
LOADED WITH ISOTOPIC FUEL**

---

**AFFIDAVIT OF HAL FOX, Ph.D.**

I, Hal Fox, Ph.D., under oath and based on personal knowledge, depose and say as follows:

1. I reside in Salt Lake City, UT. I earned a Ph.D. [Computer Science, 1983] and a Master's Degree [MBA, U of Utah, 1972]. I served in the U.S. Air Force [1952-1958] including as a meteorologist, and then worked as a Missile System Engineer for ten years. My interests are energy, engineering, and public education, and I have served as Director of the first research lab at the University of Utah Research Park, during which time I contributed to scientific research by publishing two of the major scientific periodicals describing worldwide research and engineering. I have also published over 50 technical articles around the world, and have had 15 patents issued.

2. I have read all of the relevant documents including the Board's Decision of July 29, 2001, and the original above-entitled application.

3. The Board has made a 35 U.S.C. §112, 101 rejection for failure to teach how to use the invention and a section 101 rejection for lack of utility [per M.P.E.P. §708.03(a)]. This writer, as one skilled in the art, was quick to recognize the teachings of Dr. Swartz by which a multiring calorimeter with measurement of noise, and with calibration could be used to measure activity. It is my

A56

Page 2 of 2

professional judgment that the method of measuring the activity of sample in the above-entitled action is clever, not obvious, and is an important invention with utility. Furthermore, the subject invention by Dr. Mitchell Swartz has considerable utility, not only for specific type of uses cited by Dr. Swartz, but also for a broader range of applications in both electrochemical operations and in experiments involving the handling of electrodes in some gaseous environments.

4. The Decision has ignored numerous filings delivered to the Patent Office by Dr. Swartz and others. For twelve years, this author has been involved full time in publishing information about low-energy nuclear reactions and research which have been studied in, and reported on from, over 200 laboratories in 30 countries. We have reported on research from over 3,000 papers from hundreds of laboratories in 30 countries [H. Fox and M. Swartz, 1995, "Progress in Cold Nuclear Fusion - Metanalysis using an Augmented Database", Abstracts of ICCF-5; M. Swartz and H. Fox, 1995, "Metanalysis of the Cold Fusion Literature", Abstracts of ICCF-7; M. Swartz and H. Fox, 1998, "Metanalysis of Research and Development in Cold Fusion", *Journal of New Energy*, 3, 2, 141-142.]. From this research, many invention applications have been filed, especially by Japanese and American scientists. Over 100 low-energy nuclear reactions patents have issued in Japan and many more in European countries, as we have reported in *Fusion Facts* as each patent issued. By contrast, no patents have been allowed to issue in the U.S.

5. An estimated 300 patent applications have been sent to the U.S. Office of Patents and Trademarks by inventors using these systems, but no patents have issued citing the prior art. It is not credible that hundreds of scientists and inventors are all mistaken in their experiments and data, or that only the patent examiners are sufficiently educated to point out the faults of these inventions. Therefore, the Office of Patents and Trademarks has been denying inventors their constitutional rights to the protection of intellectual property, including the above-entitled application. Inventors in other countries have been successful in obtaining patent protection by their governments on the same topic.

Respectfully submitted,



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Hal Fox, PhD, MBA

A57

Page 1 of 3

**BOARD OF PATENT APPEALS AND INTERFERENCES  
FOR THE UNITED STATES PATENT AND TRADEMARK  
OFFICE**

Inventor : Mitchell R. Swartz  
Serial No.: 08-406,457  
Filed: 3/20/1995

Group Art Unit: 2204

Examiner: Daniel Wasil

For: **APPARATUS TO DETERMINE  
THE ACTIVITY OF A SAMPLE  
LOADED WITH ISOTOPIC FUEL**

**AFFIDAVIT OF EUGENE F. MALLOVE, Sc.D.**

I, Eugene F. Mallove, ScD, under oath and based on personal knowledge, depose and say as follows:

1. I reside in Bow, New Hampshire. I earned a Doctorate of Science at the Harvard School of Public Health (1975, engineering of air pollution control) and a Masters degree (MS, BS, Massachusetts Institute of Technology, Aeronautical and Astronautical Engineering), and have served at the Voice of America and the Massachusetts Institute of Technology's News Office.

2. I have read all of the relevant documents including the Board's Decision of July 29, 2001 which mentions me directly, and the original above-entitled application. I edit and publish an international technical energy journal, Infinite Energy, cited in the Decision, which has entered its 7th year and is received and read in 42 countries. The citation made in the Decision, which was taken from *Infinite Energy*, was taken out-of-context.

3. In reviewing the evidently extremely biased judges' opinion on appeal, I find two unsupportable themes and techniques:

- i The Decision references material inappropriately and out-of-context, including that from researchers who actually found solid experimental evidence to support the cold fusion phenomena, to make the Decision's false-negative case that these phenomena "do not exist" or, due to experimental errors.

are EFM

ASB

Page 2 of 3

- AS9



EJH

Page 3 of 3

and no ability to technically assess it. He is a computer programmer and salesman. He attended a five day meeting involving more than a hundred papers and posters. Based upon his brief recall of events, the Decision uses brief, and often imprecise, words out-of-context.

8. Of all statements that could have been gathered from *Infinite Energy* or Rothwell in praise of Dr. Swartz's work (including by me), the Decision references the most neutral one by Rothwell which did not involve any technical argument against any one of Dr. Swartz's ongoing work. The Decision should have noted that Rothwell actually praises the idea in the quoted passage when he says, "This could be a superb research tool...".

9. In the paragraph of their opinion right after disingenuously citing Rothwell's out-of-context remark, the focus on the word "exotic" and conclude that this "itself raises immediate questions as to its operability." This is judicial sleight-of-hand, obviously motivated by the judges' biases against the cold fusion field in general and the Swartz invention as one particular exemplar of that field. Exotic to a nonscientist means novel and non-obvious.

10. If the Decision wanted to accurately reflect what someone skilled-in-the-art thought of Dr. Swartz's technology, it would have quoted Dr. Michael McKubre, who is an expert skilled-in-the-art whose words were directly next to the material taken out-of-context by the erroneous, crafted Decision.

11. The allegation against Dr. Swartz's invention for "lack of operability," is simply not valid. He has published this matter in the peer-reviewed journal, *Fusion Technology*. It is quite clear that the measurement of activity has great and obvious utility.

12. The Decision should have been able to separate evident bias against cold fusion phenomena from an impartial evaluation of a calorimetric device that could, in my professional opinion, be of great utility in a range of calorimetric studies.

13. I can only conclude that the Decision is motivated in its erroneous conclusion by its animus toward inventors and investigators in the field, such as Dr. Swartz. This form of intellectual bigotry has no place in the evaluation of applications before the USPTO or in the Federal government.

14. Utility and operability should not be denied by wanton disregard for the facts and of the actual invention.

SIGNED UNDER THE PAINS AND PENALTIES OF PERJURY,  
this thirteenth day of August, 2001.

Respectfully submitted,

  
Eugene F. Mallove, ScD

A60

**BOARD OF PATENT APPEALS AND INTERFERENCES  
FOR THE UNITED STATES PATENT  
AND TRADEMARK OFFICE**

---

Inventor : Mitchell R. Swartz  
Serial No.: 08-406,457  
Filed: 3/20/1995

Group Art Unit: 2204

Examiner: Daniel Wasil

For: **APPARATUS TO DETERMINE  
THE ACTIVITY OF A SAMPLE  
LOADED WITH ISOTOPIC FUEL**

---

**AFFIDAVIT OF JED ROTHWELL**

1. Jed Rothwell, under oath and based on personal knowledge, depose and say as follows:

1. I reside in Chamblee, Georgia. I earned a degree in Asian studies from (Cornell University, 19778) and studied at Okayama National University (Okayama City, Japan, 1975). I have served as a technical writer for Hitachi, NCR, and Micro-Tel, Inc. I write for the journal *Infinite Energy*, and have served as a translator of Japanese into English.

2. The Decision in the above-entitled action takes a quote from me, which was taken from *Infinite Energy*, out-of-context. None of my statements referred to the functionality, operability or performance of Dr. Swartz's multiring calorimeter.

3. Nothing I have published or heard from scientists casts doubt on the claimed capabilities of Dr. Swartz's invention. In fact, at the Conference reviewed in the article, I interviewed many people and some scientists, such as Dr. Michael McKubre, were enthusiastic about Dr. Swartz's device. Therefore I stated that it may well be a "superb research tool" in the article quoted.

4. It is apparent that the judges of the Decision have standards that are ludicrous and unscientific.

SIGNED UNDER THE PAINS AND PENALTIES OF PERJURY,  
this fourteenth day of August, 2001.

Jed Rothwell

Jed Rothwell  
1954 Airport Road, Suite 204  
Chamblee, Georgia 30341



DEPARTMENT OF THE NAVY  
NAVAL AIR WARFARE CENTER WEAPONS DIVISION  
1 ADMINISTRATION CIRCLE 521 9TH STREET  
CHINA LAKE, CA 93555-6001 POINT MUGU, CA 93042-5001

IN REPLY REFER TO:

20 May 1998

Reply Brief

Serial No: 68-466,457

Exhibit 1 - Letter from Dr. Miles, May 20, 1998

Mr. Doron Dagani, Senior Editor  
Chemical and Engineering News  
1155 - 16<sup>th</sup> St., N.W.  
Washington, D.C. 20036

Dear Mr. Dagani:

Enclosed is a reprint of my recently published reply to Jones-Hansen [*J. Phys. Chem. B*, 102, 3642 (1998)]. It was a long and difficult battle for me to have the opportunity to reply to the vicious attack of my work by the Jones-Hansen paper [*J. Phys. Chem.*, 99, 6966 (1995)]. In my opinion, their paper contained many distortions and errors concerning my publications rather than the reasonable scientific dialogue that is so badly needed for this field.

You devoted considerable space in *C&EN* (*Chemical Engineering News*, June 5, 1995, pp. 34-40) to the Jones-Hansen critic of my work; therefore, I hope you will be fair and provide some space in *C&EN* to discuss my reply.

Although critics like S.E. Jones and others have made it nearly impossible to obtain government funding for cold fusion, this research continues in many laboratories around the world. The Seventh International Conference on Cold Fusion (ICCF-7) was recently held in Vancouver, Canada, and the proceedings from this meeting will soon be available (ICCF-7 c/o ENECO, 391-B Chipeta Way, Salt Lake City, Utah 84108, Tel. 801-583-2000).

Unlike Jones and his 1989 report of cold fusion neutrons, I find no reason to retract any of my cold fusion claims. The recombination of deuterium and oxygen gases does not explain my excess heat measurements, and atmospheric contaminations do not explain my correlations between the excess power measured and the helium-4 produced in the experiments.

The cold fusion controversy will continue until an experiment is so clearly defined that it can be readily reproduced in any laboratory. In the meantime, this lack of reproducibility should not make this field of science any less real than the study of earthquakes. My results along with the results of many other laboratories suggest that there are hidden variables within the palladium metal that are not yet under experimental control.

A63

As a final note, I agreed to let Jones and Hansen reply back-to-back to my recent paper. This was a professional courtesy that they did not extend to me in 1995. This led to my extended struggle with referees and editors to have my reply published.

Sincerely,

*Melvin H. Miles*

Dr. Melvin H. Miles  
NAWCWPNS Fellow

copies.

Madeline Jacobs, C&EN Editor-In-Chief  
Dr. Eugene F. Mallove, Editor-In-Chief, Infinite Energy Magazine  
Professor Martin Fleischmann

# COMMENTS

## Reply to "Examination of Claims of Miles et al. in Pons-Fleischmann-Type Cold Fusion Experiments"

Melvin H. Miles\*

*Chemistry and Materials Branch, Research and Technology Division, Naval Air Warfare Center Weapons Division, China Lake, California 93555-6001*

*Received: June 14, 1996; In Final Form: February 3, 1998*

### Introduction

This paper is a response to S. E. Jones and L. D. Hansen,<sup>1</sup> who critically examined our claims of excess heat and helium-4 production during electrolysis of the  $\text{Pd/D}_2\text{O} + \text{LiOD}$  system.<sup>2-5</sup> Many of the allegations regarding our work have been discussed in previous publications.<sup>2-6</sup> We have also critically examined the basic principles and problems in measurements of excess power during  $\text{Pd/D}_2\text{O} + \text{LiOD}$  electrolysis in isoperibolic calorimeters.<sup>7</sup> The claim by S. E. Jones and co-workers<sup>8</sup> that faradaic efficiencies less than 100% can account for reports of excess heat in cold fusion cells is not valid at the high current densities ( $j \geq 100 \text{ mA/cm}^2$ ) required for these experiments.

### Excess Heat Production

The calorimetric results reported by our laboratory have been used to support both sides of the scientific controversy regarding anomalous effects in deuterated metals. Our first set of experiments conducted over a 5-month period (April–September 1989) produced no significant evidence for any excess enthalpy production.<sup>9</sup> The mean value for the ratio of heat out to joule heat in was  $\bar{X} = 1.00 \pm 0.04$  in our most accurate calorimetric study.<sup>9</sup> These early experiments at China Lake were listed in the Energy Research Advisory Board report to the U.S. Department of Energy as one of the groups not observing excess heat.<sup>10</sup> It is difficult to explain why our early calorimetric studies reporting no excess heat<sup>9,10</sup> are acceptable to critics of this field when later studies, that are actually more accurate, are judged to be in error.

Research groups from MIT, CalTech, and Harwell laboratories also reported no evidence for excess heat,<sup>7,10</sup> thus greatly impacting the general scientific opinion regarding this field in 1989. All three groups discontinued their experiments after only a few months of investigation. We continued to investigate other palladium samples and eventually observed significant evidence for excess enthalpy from the use of Johnson–Matthey palladium rods.<sup>2</sup> In retrospect, it would be impossible for any research group to adequately investigate the multitude of variables involved with this field in only a few months. These variables range from the palladium metallurgy to the  $\text{D}_2\text{O}$  purity, the type of electrolyte and concentration, the electrochemical cell, the electrode arrangement, the type of calorimeter, proper scaling of the experiments, the handling of materials, the current

densities used, the duration of the experiments, the loading of deuterium into the palladium, the use of additives, and so on.

As should be expected, our calorimetry has improved with time. An early version had glass tubes containing the thermistors that protruded considerably above the tops of the cells.<sup>2</sup> Although the effect of these thermistor tubes was not apparent when the room temperature was stable, cooler weather later produced greater fluctuations in room temperature and unstable thermistor readings. This was especially apparent in a water control study (Figure 6 of ref 2). In the following experiments, the thermistor tubes were made flush with the cell top, resulting in much more uniform measurements. Although Jones and Hansen<sup>1</sup> focused considerable attention on Figure 6 of ref 2, they ignored our explanation and correction for this effect (see pp 245–246 of ref 2). A dramatic improvement in the calorimetric stability is seen in the experiment following the  $\text{H}_2\text{O}$  control study (see Figure 7 of ref 2) where the single tail  $t$  test for excess enthalpy easily exceeds the 99.95% confidence level (see Table 2 of ref 2). Many of these issues were thoroughly discussed in a previous debate with S. E. Jones.<sup>11</sup>

The accuracy of our calorimetry is illustrated in Figure 1 which features one of many experiments that never displayed any evidence for excess power. The ratio,  $\bar{X}$ , of output power to input power remains close to unity. All measurements of excess power were within  $0 \pm 40 \text{ mW}$  for the entire experiment. Approximately 70% of our experiments never displayed any evidence for excess power and served as controls for our calorimetry. In June of 1995, Roger M. Hart, an expert in the design, construction, and testing of calorimeters, examined our calorimetric design and agreed with our stated error range of  $\pm 20 \text{ mW}$  or  $\pm 1\%$  of the input power, whichever is larger.

A major criticism presented by Jones and Hansen<sup>1,11</sup> of our calorimetry is the variation of the calorimetric cell constants over various experiments. For example,  $K_1$  ranges from 0.135 to 0.141  $\text{W/}^\circ\text{C}$  over four separate experiments that yield a mean of  $0.138 \pm 0.003 \text{ W/}^\circ\text{C}$  (see Table 3 of ref 2). Roger Hart pointed out that this criticism by Jones and Hansen is not valid since all cell components are repositioned in each experiment. The relative positions of the anode and cathode electrodes and of the two thermistors vary somewhat with each new cell assembly; thus, the slight variation in the calorimetric cell constants in different experiments is expected. The many experiments that produced no excess enthalpy, such as shown in Figure 1, indicate that the calorimetric cell constants do not change during an experiment.

Many experiments have proved that the recombination of  $\text{D}_2$  and  $\text{O}_2$  electrolysis gases does not occur to any significant level for typical cold fusion studies using high current densities and solid, fully submerged palladium cathodes.<sup>4,12</sup> Some scientists, however, prefer to ignore this evidence and continue to claim that the excess heat effect can be explained by faradaic efficiencies less than 100% ( $\gamma < 1$ ).<sup>8</sup> The recombination effects for Ni and Pd cathodes reported by Jones et al.<sup>8</sup> used current densities of only  $1\text{--}2 \text{ mA/cm}^2$ . Such studies are irrelevant since excess heat effects for the  $\text{Pd/D}_2\text{O}$  system require a threshold current density of about  $100 \text{ mA/cm}^2$  or higher. This requirement of high current densities was reported by M. Fleischman

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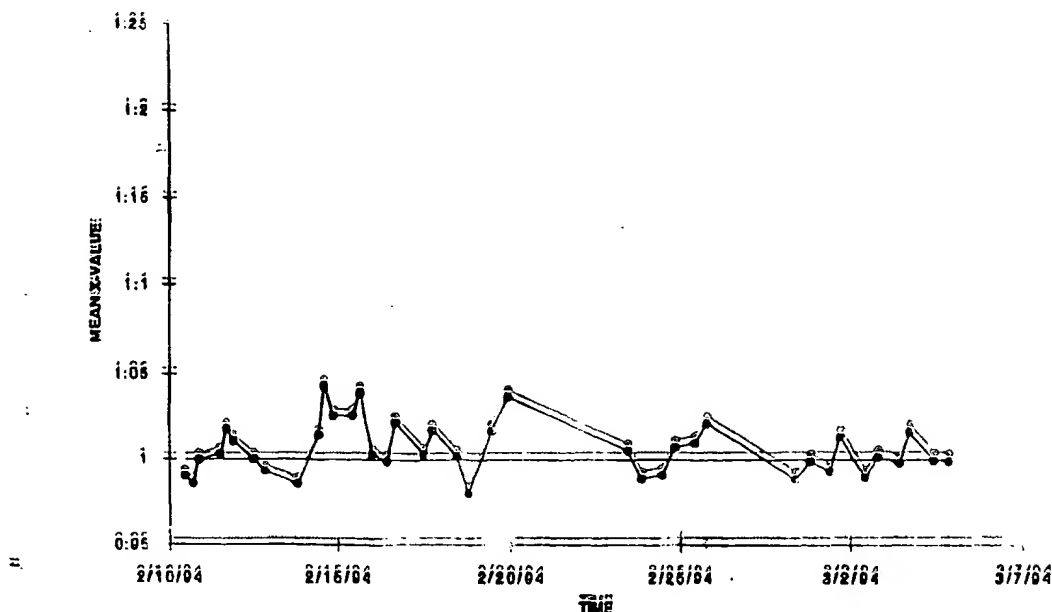


Figure 1: Ratio,  $\bar{X}$ , of the calorimetric output power and the electrochemical input power for a palladium sheet cathode. No significant excess power was observed.

et al.<sup>13</sup> in 1990. Lowering the current density in water electrolysis experiments will always decrease the current efficiency due to the slower gas evolution that allows the product at one electrode to more readily invade the vicinity and react at the opposing electrode. Furthermore, the current fraction consumed by the electrode reaction of impurities becomes larger at smaller current densities. Contrary to the comments by Jones and Hansen,<sup>1</sup> we always measured the current efficiency at the time of collection of an electrolysis gas sample for helium analysis. This was done volumetrically by measuring the rate of the displacement of water by the electrolysis gases.<sup>4</sup> For all the runs that appeared in the original table reproduced and criticized in Jones and Hansen<sup>1</sup> as Figure 1, the volume of gases evolved was as expected for no recombination.

Several other measurements and observations provided secondary checks for any recombination of  $D_2$  and  $O_2$  in our experiments. The volume of  $D_2O$  added to replenish the cell was always recorded to provide another test for any significant recombination effects. Furthermore, the rate of the electrolysis gases passing through the oil bubbler could always be directly observed. If recombination of  $D_2$  and  $O_2$  within the electrolysis cell occurs, this would slow or even stop the evolution of gases through the bubbler.

There is only one group of experiments where recombination was detected in our electrolysis experiments over a 6-year period. These studies all involved the codeposition method reported by Szpak et al.<sup>14</sup> where palladium metal is deposited from a  $D_2O$  solution containing 0.05 M  $PdCl_2$  and 0.3 M  $LiCl$  onto a copper cathode in the presence of evolving deuterium gas. This method reportedly produced excess enthalpy, tritium, and emanating radiation.<sup>14,15</sup> The deposition of palladium from  $D_2O$  solutions offers the possibility of generating a high-purity cathode material that is simultaneously loaded with deuterium. In our experiments, however, this palladium deposit was often dendritic in nature. Hence, the palladium became detached from the electrode, floated in solution, and adhered to the cell wall above the  $D_2O$  level. This finely divided palladium acted as an excellent catalyst for recombination in the gas phase; hence, these codeposition experiments sometimes resulted in loud explosions. There was also evidence that the dendritic palladium deposits occasionally contacted the anode, thus allowing some

of the current to pass directly through the cell without producing any electrolysis.

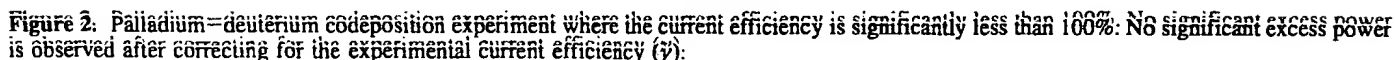
The reaction or recombination of the  $D_2$  and  $O_2$  electrolysis gases or any cell shorting could always be readily detected in our codeposition experiments.<sup>16</sup> For example, there were always obvious changes in the rate of gas flow through the oil bubbler. The extent of these effects was determined by measuring the current efficiency ( $\gamma$ ) for the  $D_2O$  electrolysis. This was done by volumetrically measuring the rate of evolution of the  $D_2 + O_2$  electrolysis gases. The resulting  $\gamma$  can be easily applied to the calorimetric equations to correct for any apparent excess enthalpy produced by recombination or other reactions of the electrolysis gases.

A typical codeposition experiment where significant recombination or dendritic shorting occurs is shown in Figure 2. The apparent excess power reaching levels up to 18% could be readily corrected for recombination or other effects by the simultaneous measurement of the rate of evolution of the  $D_2 + O_2$  electrolysis gases. This was used to determine the current efficiency ( $\gamma$ ). The corrected values for  $\bar{X}$  were then close to unity, and the overall ratio of power out/power in was  $\bar{X} \equiv 1.0005 \pm 0.022$ ; i.e., no significant excess power was observed after applying the correction for the current efficiency. The results in Figure 2 show that recombination can always be readily detected and easily corrected in our experiments. These results provide further proof that our calorimetric methods are accurate.

#### Helium-4 Production in Electrolyte Cells

Perhaps the most important point raised by S. E. Jones and L. D. Hansen<sup>1</sup> was that our helium-4 detection limit was first reported as  $10^{12}$  atoms per 500 mL of effluent gases<sup>3,4</sup> and then later increased to  $10^{13}$   $^4He$  atoms/500 mL.<sup>5,6</sup> Our earlier limit was based on measurements at the University of Texas laboratory where 10 mTorr of air in 500 mL of nitrogen gas yielded the observation of helium-4 at the detection limit of the mass spectrometer (see Table 1 of ref 3). We reported that less sensitive detection limits were expected for  $D_2 + O_2$  electrolysis gas samples versus  $N_2$  gas samples because of their different absorption properties in the cryofilter that was used to separate  $D_2$  and  $^4He$  (see pp 101 and 104 of ref 4). Furthermore, the





In retrospect, the higher helium-4 detection limit resolves the issue of atmospheric helium diffusion into our glass flasks and is consistent with the detection limits reported by a commercial laboratory.<sup>5,6</sup> Furthermore, this higher helium-4 detection limit yields helium production rates of  $10^{11} = 10^{12} \text{ He s}^{-1} \text{ W}^{-1}$ , which is the correct magnitude for typical fusion reactions that yield helium as a product.<sup>5,6</sup> The consistent merging of these various results would have been highly improbable if our initial measurements were due to errors or atmospheric contamination. Nevertheless, the revision in our helium-4 detection limit was

S. E. Jones and L. D. Hansen<sup>1</sup> contend that our observation of helium-4 in four out of ten N<sub>2</sub>-filled glass flasks must be included for consistent and fair statistical treatment of our data. We totally disagree because air was deliberately introduced into four of these flasks in order to estimate the helium-4 detection



limit, and a fifth flask experienced an obvious air leak probably induced by air freight shipment (see Table 1 of ref 3). The only valid controls were four Pyrex flasks filled with boil-off  $N_2$  at the China Lake laboratory and then analyzed at the University of Texas 9 days later. The diffusion rate of  $3.2 \times 10^{12}$   $^4He$  atoms/day measured for our  $N_2$ -filled Pyrex flasks<sup>5</sup> and 9 days of storage yields a helium-4 concentration of  $2.9 \times 10^{13}$   $^4He$  atoms/500 mL or 3 ppb due to atmospheric diffusion alone. One  $N_2$ -filled Pyrex flask showed the presence of  $^4He$  at the detection limit while no helium could be detected for the other three Pyrex flasks (see Table 1 of ref 3). Results for these four  $N_2$ -filled Pyrex flasks provide additional evidence that our helium-4 detection limit was considerably higher than  $10^{12}$  atoms/500 mL (0.1 ppb) that we claimed initially.<sup>3,17</sup>

Experimental measurements of the diffusion of atmospheric helium into our Pyrex flasks is presented in Figures 1 and 2 of ref 5. Quantitative measurements by the Rockwell International laboratory clearly show that the amount of helium-4 increases linearly with the flask storage time as predicted theoretically.<sup>3</sup>

Plots of our data presented by Jones and Hansen<sup>1</sup> in their Figure 2 also show the helium-4 concentration versus the Pyrex flask storage time. The later graph (1993) gives the correct data points. The lines drawn in these figures were intended to simply illustrate that there is absolutely no correlation between the helium concentration reported and the flask storage time. The correlation coefficients are actually found to have negative values for either graph rather than the expected positive values; hence, bizarre statistics are encountered for arguments that our helium results are due to atmospheric helium diffusing into our Pyrex glass flasks. Note that the effect of atmospheric helium diffusing into our glass flasks should have been measurable even on an order of magnitude scale if our helium-4 detection limit were actually  $10^{12}$  atoms/500 mL as reported initially. For example, the experimental diffusion rate of atmospheric helium into our Pyrex glass flask yields  $2 \times 10^{12}$  atoms/500 mL after 1 day and  $2 \times 10^{13}$  atoms/500 mL after 10 days.<sup>5</sup>

S. E. Jones and L. D. Hansen<sup>1</sup> report that our designation of an experiment as a "control" is done after the experiment is run, not before. Neither Jones nor Hansen has been in our laboratory; hence, they have no basis for such a statement. Permanent laboratory records always defined the amount of excess power prior to any helium measurements. In general, excess power was consistently produced day after day in experiments that yielded excess helium-4 production, while no excess power was ever detected in experiments that served as controls.<sup>16</sup> In retrospect, helium-4 is probably the only nuclear product that could have remained so well hidden from view over the past 8 years of cold fusion experiments.

There is compelling evidence that the anomalous excess heat measured at our laboratory is associated with helium-4 production. For example, 30 out of 33 heat and helium studies yielded either excess helium when excess power was measured or no excess helium when no excess power was present.<sup>16,18</sup> A statistical treatment shows that the probability is approximately one in a million that our complete set of heat and helium results could be this well correlated due to random experimental errors in our calorimetry and helium measurements.<sup>16,18</sup> It is even much more unlikely that random errors could consistently yield helium-4 production rates in the appropriate range of  $10^{11}$ – $10^{12}$  atoms/s per watt of excess power.

### Radiation Measurements

Radiation monitoring was imposed upon our laboratory due to safety concerns but was never intended to be a major focus

of our program. This is one area where the criticism by S. E. Jones et al.<sup>1</sup> may have some validity. Nevertheless, anomalous radiation was detected by X-ray film exposure,<sup>3,4,17</sup> by the use of several different GM detectors,<sup>5,16</sup> and by the use of NaI detectors.<sup>16</sup> There was never any anomalous radiation when the experiments were not running.

Portable equipment for measuring radiation was available within the Navy;<sup>15,16</sup> thus, our laboratory did not accept the offer by S. E. Jones for the use of his portable X-ray spectrometer. Control studies showed that energies less than 50 keV could not escape from our cell and water bath. The revision of our experiments to optimize the X- and  $\gamma$ -radiation spectrometry would have critically compromised our calorimetry. Appropriate experiments were conducted at another Navy laboratory that yielded evidence for the emission of low-intensity X-rays during cathode polarization of the Pd/D system.<sup>15</sup> These experiments required specially designed cells where the palladium electrode is close to the detector window.<sup>15</sup>

### Miscellaneous Issues

S. E. Jones and L. D. Hansen<sup>1</sup> suggest a possible energy storage in the cell where there is a *negative* excess heat early in the experiment. We have never observed any energy storage in cells that produced excess heat. There is no real scope for energy storage in our cells—quite the reverse actually, since if deuterium were to leak out of the palladium, the cell would cool down.

S. E. Jones and L. D. Hansen<sup>1</sup> contend that  $D_2$  and  $O_2$  diffuse rapidly through Teflon; thus, recombination could occur on our anode and cathode lead wires despite our use of thick heat shrinkable Teflon tubing to protect these wires. This effect would certainly be very small and would diminish as the reaction product,  $D_2O$ , accumulated at the surface. Furthermore, cell calibrations performed under similar experimental conditions would zero out any such effects. Finally, volumetric measurements of the evolved gases show that no recombination occurs.

S. E. Jones and L. D. Hansen<sup>1</sup> attempt to explain our lack of helium-4 in  $H_2O$ -control experiments by suggesting that we were simply getting better at keeping out  $^4He$ . They overlook the fact that our very first  $D_2O$  sample (10/17/90-A) produced no significant excess power and no detectable helium.<sup>3–5</sup> Later experiments using metal flasks showed that our techniques yielded very consistent results in keeping atmospheric helium out of our system.<sup>6,16</sup>

Several additional statements by S. E. Jones et al.<sup>8</sup> need to be corrected. The thermoneutral potential,  $E_N$ , is the cell voltage at which the entropic cooling balances the polarization heating. Its numerical value is  $E_N = -\Delta H/zF$ , not  $\Delta H/F$  as in eq 3 of ref 8, with  $z$  indicating the number of charges transferred in one reaction step. The correct equation makes  $E_N$  invariant with the expression of the cell reaction and the direction of the cell current. At the high current densities used in cold fusion experiments, the cell voltage is always considerably larger than  $E_N$ ; hence, concerns by S. E. Jones et al.<sup>8</sup> regarding cells operating close to  $E_N$  do not apply.

More serious errors by S. E. Jones et al.<sup>8</sup> are found in their presentation of the electrochemical aspects of the cell operation. In particular, they stated that the exchange current density depends on the electrode surface area. The exchange current density always has dimensions of A/m<sup>2</sup> or similar units; hence, it cannot depend on the electrode surface area. Furthermore, there is no such thing as an exchange current density for their reaction 4 in ref 8. This cell reaction consists of the oxidation of hydrogen at the anode and the reduction of oxygen at the

cathode; hence, there are two distinctly different exchange current densities associated with the cell reaction.

### Conclusions

Documentation is presented that shows major allegations by S. E. Jones and L. D. Hansen concerning our experiments have already been explained in our previous publications as well as in a 1992 published discussion. The simultaneous measurements of power and the rate of evolution of the electrolysis gases in our experiments prove that faradaic efficiencies less than 100% cannot account for our reports of excess heat. Excess enthalpy for the Pd/D<sub>2</sub>O system generally involves high current densities that exceed 100 mA/cm<sup>2</sup>; therefore, the report by S. E. Jones et al. of low faradaic efficiencies using current densities of only 1–2 mA/cm<sup>2</sup> is not applicable to our cold fusion experiments. Based on experiments at our laboratory, there is compelling evidence that the anomalous excess heat is associated with helium-4 production. For example, 30 out of 33 heat and helium studies yielded either excess helium when excess power was measured or no excess helium when no excess power was present. The probability of obtaining this result by random errors in our heat and helium measurements is about one in a million. Permanent laboratory records always defined the presence or absence of excess power prior to any helium measurement. The measurement of helium in the electrolysis gas samples at three different laboratories places our rate of helium-4 production at  $10^{11}$ – $10^{12}$  atoms/s per watt of excess power. This is the correct magnitude for typical deuteron fusion reactions that produce helium-4 as a product.

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# Reply to "An Assessment of Claims of Excess Heat in Cold Fusion Calorimetry"

Melvin H. Miles

Chemistry and Materials Branch, Research and Technology Division, Naval Air Warfare Center, Weapons Division, China Lake, California 93555-6001

Received: February 3, 1998

1. My journal publications criticized by Jones and Hansen report only experimental results; hence, theoretical arguments are not germane to this debate. In science, theory guides but experiments decide. Nevertheless, several theories exist for cold fusion that fit nicely with my experimental results.<sup>1,2</sup> I cannot find any experimental errors that explain our radiation and heat measurements.

2. The rate of stirring was carefully considered as a possible error source in our calorimetric experiments. We found that stirring was not a significant error source at currents greater than 100 mA (see Figures 3 and 4 in *J. Phys. Chem.* 1994, 98, 1948-1952). Our calorimetric experiments generally used currents of 400-600 mA. We always employed long, narrow calorimetric cells that provide rapid radial and axial mixing of the electrolyte by the electrolysis gas bubbles. In our calori-

metric cell designs, the temperatures were measured in an integrating liquid or solid phase surrounding the electrochemical cell. The new experiments reported by Shelton, Hansen, Thorne, and Jones<sup>3</sup> are not applicable to our results since their cell temperatures are measured directly in the electrolyte. Stirring will be inadequate if short, fat calorimetric cells are used as shown in the Figure 1 schematic by Jones et al.<sup>3</sup> F. G. Will<sup>4</sup> reports that the experimental results of Jones et al.<sup>3</sup> on faradaic efficiencies less than 100% (recombination) were obtained at small current densities (0.5-4 mA/cm<sup>2</sup>) and that the extrapolation of these findings to the much larger current densities generally employed in cold fusion studies has led Jones et al. to incorrect conclusions. Therefore,  $H_2(D_2) + O_2$  recombination must be ruled out as an explanation for excess heat.<sup>4</sup>

## References and Notes

- (1) Preparata, G. *QED Coherence in Matter*; World Scientific: River Edge, NJ, 1995; Chapter 8.
- (2) Chubb, T. A.; Chubb, S. A. *Fusion Technol.* 1993, 24, 403-416.
- (3) Shelton, D. S.; Hansen, L. D.; Thorne, J. M.; Jones, S. E. *Thermochim. Acta* 1997, 297, 7-15.
- (4) Will, F. G. *J. Electroanal. Chem.* 1997, 426, 177-184.
- (5) Jones, J. E.; Hansen, L. D.; Jones, S. E.; Shelton, D. S.; Thorne, J. M. *J. Phys. Chem.* 1995, 99, 6973-6979.

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* MITCHELL R. SWARTZ

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Appeal 2009-001853  
Application 10/646,143  
Technology Center 3600

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Before JOHN C. KERINS, STEVEN D.A. McCARTHY, and KEN B.  
BARRETT, *Administrative Patent Judges*.

Opinion for the Board by BARRETT, *Administrative Patent Judge*.

Concurring opinion by McCARTHY, *Administrative Patent Judge*.

BARRETT, *Administrative Patent Judge*.

DECISION ON APPEAL<sup>1</sup>

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the "MAIL DATE" (paper delivery mode) or the "NOTIFICATION DATE" (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

Appeal 2009-001853  
Application 10/646,143

## STATEMENT OF THE CASE

Mitchell R. Swartz (Appellant) seeks our review under 35 U.S.C. § 134 of the Examiner's decision rejecting claims 6-13. Claims 1-5 and 14-20 have been withdrawn by the Examiner as being directed to a non-elected invention, and are not before us. *See* Decision on Petition, mailed May 22, 2006, at 2<sup>2</sup>. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

## THE INVENTION

Appellant's claimed invention pertains to the production of electricity from metals loaded with hydrogen obtained from heavy water. *See* Spec. 1, 4. Claim 6, reproduced below, is representative of the subject matter on appeal.

Claim 6. A process for producing electricity from a metal loaded with hydrogen comprising the steps of:

using an electrolytic solution consisting of pure heavy water without additional salts for minimizing unwanted reactions in a reaction container;

providing an electric power system with two electrodes to load one electrode with said hydrogen to activate heat production by achieving an open circuit voltage of at least 2.4 volts between said electrodes;

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<sup>2</sup> Appellant refers to a petition decision dated February 1, 2006, in which the Examiner was directed to withdraw the finality of a previous action and which stated that claims 1-5 and 14-20 were to be examined as being directed to the same or similar invention. Appeal Brief filed June 19, 2006 (hereinafter "App. Br.") at 2; *see also* Reply Br. 4. The May 22, 2006, petition decision superseded that earlier decision, and concluded on page 2 that the Examiner properly withdrew claims 1-5 and 14-20.

Appeal 2009-001853  
Application 10/646,143

enclosing said reaction container with a gas-catching hood and vertical wall to create two volumes for physically separating hydrogen gas from molecular oxygen;

adding a thermal barrier surrounding the reaction container to retain heat sufficient to continue the activation;

recovering energy lost to said gas generation during loading by generating electricity after directing said generated gases to a fuel cell;

producing electricity from the heat generated by said activation by a thermoelectric converter.

### THE REJECTIONS

The evidence in support of unpatentability relied upon by the Examiner may be found on pages 3 through 5 of the Answer.

The following Examiner's rejections are before us for review:

1. Claims 6-13 are rejected under 35 U.S.C. § 101 because the claimed invention is inoperative and therefore lacks utility;
2. Claims 6-13 are rejected under 35 U.S.C. § 112, first paragraph, for failing to comply with the enablement requirement<sup>3</sup>;
3. Claims 6-13 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Appellant regards as the invention; and

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<sup>3</sup> The Examiner also objected to the Specification under 35 U.S.C. § 112, first paragraph, because the claimed method is inoperable. Ans. 6-13. To the extent that this objection relates to the rejections of claims 6-13, our decision with respect to the rejections likewise is dispositive as to the corresponding § 112 objection. Because we address the operability issue in our analysis of the rejections, the Examiner may take appropriate action with respect to the objection commensurate with our decision on the rejections.

Appeal 2009-001853  
Application 10/646,143

4. Claims 6, 8, 9, 11, and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Gunn (US 2,384,463, issued Sep. 11, 1945), Fowler (US 4,211,620, issued Jul. 8, 1980), and Schulten (US 4,274,938, issued Jun. 23, 1981).

### ISSUE

The primary dispute in this case concerns the Examiner's finding that the claimed invention is inoperative and therefore lacks utility. The dispositive issue presented is:

Has Appellant shown that the Examiner erred in finding that the utility of Appellant's claimed invention has not been established and in concluding that the Specification lacks an enabling disclosure?<sup>4</sup>

### FINDINGS OF FACT

We adopt as our own the Examiner's findings of fact contained in the Answer on page 5 through the second full paragraph on page 10, first full paragraph on page 11 through the first full paragraph on page 13, section d on pages 15-16, the response to argument section on page 19 through the second full paragraph on page 27 (except for the first full paragraph on page 26), and section d on page 30.

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<sup>4</sup> Appellant has chosen to argue the operability of the claimed subject matter in terms of whether the claimed methods produce excess heat in the deuterated metal (*e.g.*, App. Br. 13) and whether the system will convince educators, scientists and students of the importance of hydrogen loaded systems. We do not speculate as to whether the claimed methods may possess utility other than that asserted by Appellant in this appeal. *Ex Parte Frye*, 94 USPQ2d 1072, 1075-76 (BPAI 2010) (precedential).

Appeal 2009-001853  
Application 10/646,143

## PRINCIPLES OF LAW

“The questions of whether a specification provides an enabling disclosure under § 112, ¶ 1, and whether an application satisfies the utility requirement of § 101 are closely related.” *In re Swartz*, 232 F.3d 862, 863 (Fed. Cir. 2000). The utility requirement of § 101 requires that the claimed invention be operable to achieve a useful result. *Id.* Where the invention is inoperative, the claims also fail to satisfy the enablement requirement of § 112, first paragraph, because a person of ordinary skill in the art cannot practice the invention. *Id.* Whether the invention satisfies the utility requirement is a question of fact, and enablement is a question of law based on underlying factual inquiries. *Id.*

Before the PTO can reject a patent application for lack of utility, it must have reason to doubt the objective truth of the statements provided in the written description. *In re Brana*, 51 F.3d 1560, 1566 (Fed. Cir. 1995). “The PTO may establish a reason to doubt an invention’s asserted utility when the written description ‘suggest[s] an inherently unbelievable undertaking or involve[s] implausible scientific principles.’” *In re Cortright*, 165 F.3d 1353, 1357 (Fed. Cir. 1999) (quoting *In re Brana*, 51 F.3d 1560, 1566 (Fed. Cir. 1995)) (alterations in original). Once the PTO furnishes evidence that one of ordinary skill in the art would reasonably doubt the asserted utility of the claimed invention, the burden shifts to the applicant to provide evidence sufficient to convince such a skilled individual of the invention’s asserted utility. *Swartz*, 232 F.3d at 864.



Appeal 2009-001853  
Application 10/646,143

## ANALYSIS

### *The Utility and Enablement Rejections*

The claims on appeal include independent claim 6 and claims 7-13, which depend therefrom. Although Appellant asserts that the claims do not stand or fall together, Appellant's arguments are almost exclusively directed to his invention generally rather than any particular claim. *See, e.g.*, App. Br. 13-14, 154. To the extent that Appellant addresses the dependent claims individually, Appellant asserts that the additional step recited in a dependent claim is clearly disclosed in the Specification and offers the conclusory assertion that the dependent claim is operable. *See, e.g.*, App. Br. 57-58 (discussing claim 7). As such, we do not consider Appellant to offer separate substantive arguments for the claims on appeal, and, accordingly, we consider the claims to be argued as a group. We select independent claim 6 as the representative claim, and dependent claims 7-13 stand or fall with claim 6. 37 C.F.R. § 41.37(c)(1)(vii).

Appellant's claim 6 recites "[a] process for producing electricity from a metal loaded with hydrogen ...." The Examiner found that Appellant's invention is directed to the production of excess heat by cold fusion. Ans. 6, 8, 30. Appellant does not appear to dispute this finding, but rather asserts that he has shown that his invention produces excess heat and that he has demonstrated how to reproducibly make cold fusion. App. Br. 13, 17. Thus, we find that Appellant's assertion of utility is that the claimed invention produces electricity via cold fusion. Appellant also asserts that the invention has usefulness as a teaching tool. App. Br. 15; Spec. 9. However, the invention's use as an education tool appears to involve either educating students and scientists as to the importance of cold fusion or activities not

Appeal 2009-001853  
Application 10/646,143

commensurate with the scope of claim 6 or of its dependent claims 7-13, such as delivering electricity to a load for measurement or educational demonstration. Spec. 9. Accordingly, we do not consider the educational aspect of the invention to be a separate asserted utility of the claimed invention.

The Examiner rejected the claims under §§ 101 and 112, first paragraph, based on the determination that the claimed invention is inoperative, lacks utility and, thus, is not enabled. Ans. 6-7, 15-16. The Examiner explains how Appellant's method is similar to prior unsuccessful cold fusion processes, such as that of Fleischmann and Pons, and notes that the scientific community has concluded that the excess heat identified by Fleischmann and Pons was due to experimental error. Ans. 7-8, 19-20. The Examiner also found that Appellant does not disclose additional features or components that would cause Appellant's method to be operable where previous attempts were not. See Ans. 11. The Examiner further finds that Appellant's assertion that the Specification evidences excess heat is suspect because Appellant has not adequately accounted for possible errors. *Id.* at 20-21.

The Examiner has provided several references demonstrating that the purportedly positive results of cold fusion experiments are not reproducible. See, e.g., Ans. 7-10 (discussing several of the cited references). As such, we determine that the Examiner has established a reasonable basis for questioning the truth of Appellant's stated utility, and, specifically, has shown that one of ordinary skill in the art would reasonably doubt the utility of Appellant's invention.

Appeal 2009-001853  
Application 10/646,143

Appellant argues that the Examiner misunderstands the invention, and that his invention is different than prior experiments. *See, e.g.*, Reply Br. 38. For example, Appellant appears to argue that “the absence of ‘additional salts’” in the electrolytic solution is a distinguishing feature. *Id.* at 43. Appellant additionally asserts that the invention contains a monitoring step using the open circuit voltage, apparently to indicate full loading of hydrogen, and that the supplied energy in his method is 3,000 volts. Reply Br. 38, 40-41 (citing Spec. 10, 18-21); *see also* Reply Br. 40 (“the invention involve[d] is driven by hundred to thousands of volts, and the 2.4 volts is the monitoring voltage.”) It is questionable as to whether all of Appellant’s arguments – particularly the driving voltage argument – are commensurate with the scope of claim 6. Nonetheless, regardless as to how Appellant’s process might differ from past efforts, we agree that Appellant’s claimed invention is directed to cold fusion and is not so different from that of prior researchers’ work that the reasonable doubt disappears.

We determine that Appellant has not shown error in the Examiner’s finding that one of ordinary skill would reasonably doubt the asserted utility of the claimed invention. Accordingly, the burden shifts to Appellant to submit evidence sufficient to convince one of ordinary skill in the art of the invention’s utility. *Swartz*, 232 F.3d at 864.

As an initial matter regarding Appellant’s rebuttal evidence, we point out that even *pro se* appellants are required to substantially comply with the requirement of providing an appendix containing any evidence relied upon and indicating where in the record that evidence was entered by the Examiner. 37 C.F.R. § 41.37 (c)(1) and (c)(1)(ix). Appellant has not done so. The Examiner states that most of Appellant’s cited references and

Appeal 2009-001853  
Application 10/646,143

declarations “are not art of record.”<sup>5</sup> Ans. 25; *see also* Ans. 23, 26; *accord* Reply Br. 19-21 (Appellant referring to evidence in the appendices of “sequestered” appeal briefs for several applications); *id.* at 160 (“the hundreds of pounds of peer-reviewed publications, Declarations, and Evidence in the Appendices of the sequestered Appeal Briefs”). Out of an abundance of caution, we have considered Appellant’s supporting documents appended to the Appeal Brief and the Reply Brief for this appeal, although it is not clear whether any of these documents was entered into the record prior to the appeal. We, however, decline to further scour the record<sup>6</sup> in search of entered evidence to support Appellant’s positions.

Appended to Appellant’s Reply Brief is a document captioned as the “Declaration of Peter Hagelstein.” Reply Br., Appendix H. This document constitutes argument only, and not evidence, because it does not satisfy the formal requirements of an oath (made before a person within the United States authorized to administer oaths, 37 C.F.R. § 1.66) and also does not satisfy the requirements of a declaration in lieu of oath (37 C.F.R. § 1.68), in that it does not state that Declarant has been warned that willful false statements and the like are punishable by fine or imprisonment, or both, and may jeopardize the validity of the application or any patent issuing thereon. Furthermore the “declaration” is primarily directed to explaining why those who doubt the operability of cold fusion/excess heat are incorrect, and offers little or no specific opinion or facts directed to whether Appellant’s *claimed*

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<sup>5</sup> The procedural issue concerning any denial of entry of documents into the record is not before us.

<sup>6</sup> The Image File Wrappers for the application before us and for its parent application (Appl. No. 07/339,976) together contain at least 541 items.

Appeal 2009-001853  
Application 10/646,143

invention is operable and reproducible. *See* Reply Br., Appendix H, ¶¶ 3-4 (asserting that Dr. Swartz's results "on his Phusor experiments ... look very good" and "are competitive in terms of reproducibility and power gain with the best results obtained by other groups," and that "the technology developed by Swartz looks to be very important.") The assertions in Appendix H do not persuade us that those in the art lacked reasonable doubt as to the operability and reproducibility of cold-fusion experiments generally or Appellant's claimed invention specifically. Similarly, we find that the other exhibits attached to the briefs would not convince one of ordinary skill in the art that Appellant's invention has utility.

Appellant argues that the Examiner has ignored Appellant's supplied data, several hundreds of pounds of exhibits, and declarations, and contends that this "is consistent with a conspiracy against America and the US Constitution." App. Br. 29. It does not appear to us that the Examiner has ignored any evidence *in the record*. *See* Ans. 23-24. Rather it seems that much of the purported supporting evidence is not in the record and that the Examiner simply has not given as much weight to Appellant's record evidence as Appellant deems appropriate. Furthermore, in assessing whether one of ordinary skill in the art would reasonably doubt the utility of Appellant's claimed invention, the Examiner need not, as Appellant suggests, respond to and rebut every assertion made in every document referenced by Appellant. *Contra, e.g.*, App. Br. 32 ("Where is the Examiner's Response to any or all of the twelve (12) volumes of the Cold Fusion Times?")

We have considered Appellant's remaining arguments offered in the Appeal Brief and the Reply Brief, and find them unpersuasive.

Appeal 2009-001853  
Application 10/646,143

While we appreciate Appellant's desire to foster America's energy independence, we simply cannot find that cold fusion research generally and the development of Appellant's invention specifically has progressed to the point where one of ordinary skill would no longer continue to reasonably doubt the utility and operability of Appellant's claimed invention. We determine that the Examiner did not err in finding that the utility of Appellant's invention has not been established. Because an inoperative invention cannot be enabled, the Examiner also did not err in concluding that Appellant's claims fail to satisfy the enablement requirement.

As mentioned above, we consider Appellant to have argued the claims on appeal as a group. However, even if we concluded that Appellant offered separate arguments for each claim, the outcome of this case would not change because all of the claims on appeal are directed to cold fusion and because we find that none of the dependent claims further limit the claimed invention to one that is operable.

For the reasons set forth above, we affirm the utility and enablement rejections of claims 6-13 under §§ 101 and 112, first paragraph. As we have affirmed the enablement rejection of all of the claims on appeal for lack of utility and operability, we do not reach the Examiner's additional bases for concluding that the claimed invention is not enabled. *See* Ans. 13-14, 27-28.

*The Rejection under the Second Paragraph of § 112*

The Examiner offers two bases for rejecting the claims under § 112, second paragraph. We cannot sustain the rejection under either basis.

First, the Examiner concludes:

The claims are vague, indefinite and incomplete for lacking support for the elements in claim 6 discussed in section a)

Appeal 2009-001853  
Application 10/646,143

above [concerning enablement]. Thus, the metes and bounds of the claims cannot be determined.

Ans. 15. The Examiner's reference to a lack of support suggests an inadequacy of the Specification, not the claims, and thus is directed to a rejection under the first paragraph of § 112 rather than the second paragraph. Further, the Examiner does not adequately identify which elements of claim 6 are vague and indefinite. As such, we cannot sustain the rejection under § 112, second paragraph, on this first basis.

Second, the Examiner, citing the Manual of Patent Examining Procedure (MPEP) § 2172.01, concluded that the claims omit critical elements. Ans. 15. The Examiner maintains that the omitted elements are those additional structures not found in the combined teachings of Gunn, Fowler, and Schulten (the references cited for the obviousness rejection) that are necessary to produce heat energy by cold fusion. *Id.* This basis implicates the "subject matter which [Appellant] regards as his invention" requirement of § 112, second paragraph. As the cited portion of the MPEP indicates, the missing elements pertinent to this inquiry are those described by Appellant in the Specification or in other statements of record as essential to the invention. Thus, the proper analysis involves a comparison of the claimed invention to Appellant's description of the invention, not to the prior art. The Examiner does not identify a missing element described by Appellant as critical to the invention. Accordingly, we cannot sustain the rejection under the second paragraph of § 112 on this second basis.

In summary, we cannot sustain the rejection of claims 6-13 under the second paragraph of § 112. However, our decision in this regard should not be interpreted as a determination that the claims are definite or otherwise

Appeal 2009-001853  
Application 10/646,143

satisfy the requirements of § 112, second paragraph. We merely determine that, on the record before us, the Examiner has not set forth an adequate basis for the rejection.

### *The Obviousness Rejection*

Independent claim 6 recites “using an electrolytic solution consisting of pure heavy water without additional salts.” The Examiner determined that Appellant intended to use the typically broader term “comprising” rather than “consisting of.” Ans. 18. The Examiner maintains that ordinary water contains a small amount of heavy water, and found that Fowler’s water reads on Appellant’s electrolytic solution under the Examiner’s interpretation. *Id.* The Examiner also maintains that the Specification does not define “pure heavy water,” and therefore the phrase is broad enough to encompass Fowler’s water. *Id.*

The Examiner finds that hydrogen is an isotope distinct from the deuterium isotope that forms heavy water and apparently reasons that, because the claim recites “hydrogen,” Appellant must have intended that the electrolytic solution include components other than pure heavy water. *See id.* The Examiner’s reasoning does not persuade us that Appellant’s intended meaning is so clear as to justify rewriting the claim – from “consisting of” to “comprising.” Further, even if there is no explicit definition of “pure heavy water” in the Specification, we cannot conclude that one of skill in the art reading the claim in light of the Specification would understand that phrase to encompass ordinary water. Thus, we determine that Examiner’s interpretation of claim 6 is unreasonably broad. As the obviousness rejection is based on this interpretation and the



Appeal 2009-001853  
Application 10/646,143

corresponding finding, we cannot sustain the rejection of independent claim 6 and of its dependent claims 8, 9, 11, and 13.

### CONCLUSIONS

Appellant has not shown that the Examiner erred in finding that the utility of the claimed invention has not been established and in concluding that the Specification lacks an enabling disclosure. The rejections of claims 6-13 under §§ 101 and 112, first paragraph, for lack of utility and lack of enablement are affirmed.

On the record before us, we cannot sustain the other rejections, and therefore the rejections of claims 6-13 under § 112, second paragraph, and of claims 6, 8, 9, 11, and 13 under § 103 are reversed.

### DECISION

The decision of the Examiner to reject claims 6-13 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

### AFFIRMED

JRG

Appeal 2009-001853  
Application 10/646,143

McCARThY, *Administrative Patent Judge, concurring*:

I join fully in my colleagues' findings, conclusions and decision. I write separately only to comment on certain statements in the Appellant's briefs which might be interpreted as personal attacks on the U.S. Patent and Trademark Office and the Office's employees. The following examples may be gleaned from the Appeal Brief and the Reply Brief:

Where is the Examiner's Response to Applicant's citation of confirmations of Dr. Miles nuclear (helium-4) findings? This is important because Dr. Miles was given a US patent, proving the application of Exhibit "C" and applicant-harassment are selective. How does the Examiner and Office decide which US Citizens to harass and deny their civil rights? The Applicant requests [an] answer, and will consider depositions if no answer is forthcoming.

(App. Br. 30).

Thus, there is growing evidence that the Office's opinion that cold fusion "does not exist" is incorrect, but is only made to conform with Exhibit "C" made to keep back the United States from energy independence, and to usurp authority from the United States Constitution, Congressional directive, and to impair Applicant's civil rights. The Applicant formally and explicitly requested that the Examiner should explain BOTH Exhibit "C" and why the Office has systematically undermined US security and the US Constitution from the time of Exhibit "C" through the 911 Atrocities to today.

(App. Br. 41).

Appeal 2009-001853

Application 10/646,143

If the Examiner wishes to continue to quote altered data [Abagli], then in light of just-discovered Exhibit 'C' there is a conspiracy by the Office, and there continues serious violation of [18] USC 1001 because the Office does once again make knowingly disingenuous false statements known to be false *a priori*. . . . The Office communication is thus in error . . . and is using mail fraud.

(App. Br. 43-44).

The Examiner's statement is disingenuous and at variance with DTRA, the USN, Japan, and enough individuals that the Patent Office should question the loyalty of [the Examiner's] Group Art [Unit]. . . . Is this just blatant, unsupported, discrimination against the Appellant, while America is at war over energy (the very product produced by the present invention)[?]

(Reply Br. 26).

The Appellant submits no persuasive evidence to support these statements.

The Appellant appears to be an educated professional, experienced in the patent prosecution process and deeply committed to this field of study. Should the Appellant choose to pursue the present application further, I suggest that the Appellant might present the legal and technical arguments to better effect were the Appellant to omit statements such as these.

Mitchell R. Swartz, ScD, EE, MD  
16 Pembroke Road  
Weston, MA 02493

No. 02-1565

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IN THE  
Supreme Court of the United States

Mitchell R. Swartz, *Petitioner*

v.  
Nicholas P. Godici,  
Commissioner for Patents,  
*Respondent*

On Petition For A Writ Of Certiorari  
To United States Court Of Appeals  
For The Federal Circuit  
92 - 1240  
(Serial No.: 08-406,457)

IN RE MITCHELL R. SWARTZ

Appeal from the Board of Patent Appeals  
and Interferences  
(No. 98-2593)

PETITIONER'S REQUEST  
FOR REHEARING OF  
PETITION FOR  
A WRIT OF CERTIORARI

Mitchell R. Swartz,  
ScD, MD, EE  
P.O. Box 81135  
Wellesley Hills, MA  
02481-0001  
September 1, 2003

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What is the constitutional obligation of this court to enforce the protection of Article I, Section 8, Clause 8, enabled by 35 U.S.C. §112 and 35 U.S.C. §101, in the face of a purported but unproven "unanimous" opinion:

What is the constitutional obligation of this court to enforce the protection of Article I, Section 8, Clause 8, when peer-reviewed papers prove operability in the face of a purported but unproven "unanimous" opinion:

Whether The Office Corrected Its Behavior Of Systematic Violations Of 18 U.S.C. §1001 after Petitioner contacted this court.

Whether The Office Corrected Its Disingenuous Behavior Of Citing Art Cut Of Cloth Made Other Than The Present Invention after Petitioner contacted this court

Whether the Office Corrected its Behavior and Has complied with the authority of the United States Constitution and Congressional will after Petitioner contacted this court.

<b>Table Of Contents Of Request</b>	
	<b>Page</b>
<b>Questions Presented</b>	<b>i</b>
<b>List Of Parties</b>	<b>****</b>
<b>Table Of Contents</b>	<b>iii</b>
<b>Table Of Authorities Cited</b>	<b>v</b>
<b>Opinions Below</b>	<b>****</b>
<b>Jurisdiction</b>	<b>****</b>
<b>Constitutional And Statutory Provisions Involved</b>	<b>****</b>
<b>Basis Of Federal Jurisdiction In The Court Of First Instance</b>	<b>****</b>
<b>CONCISE STATEMENT OF THE MATERIAL FACTS</b>	<b>****</b>
<b>REASONS FOR GRANTING THE WRIT</b>	<b>9</b>
<b>QUESTIONS PRESENTED</b>	<b>12</b>
<b>CONCLUSION</b>	<b>28</b>
<b>APPENDIES A -G</b>	<b>*****</b>
<b>APPENDIX H -</b>	<b>36</b>
<b>APPENDIX J -</b>	<b>37</b>

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Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952) : : : : :

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Gottschalk v. Benson [409 U.S. 63 (1972), 409 U.S. No. 71-485]
Graham v. John Deere Co., 383 U.S. 1, 7-10 (1966)
Griffin v. Breckenridge, 91 S Ct 179D
In re Alton [94-1495, S.N. 06/483,451]
In re Brana, 51 F.3d 1560, 1564 n.12, 34 USPQ2d 141439 n.12 (Fed. Cir. 1995)
In re Chilowsky, 229 F.2d 457, 462, 108 USPQ 321, 3 (CCPA 1956)
In re Eltgroth, 419 F.2d 918, 164 USPQ 221 (CCPA 1977)
In re Ferens 417 F.2d 1072, 1074, 163 USPQ 609, 6 (CCPA 1969)
In re Fouche 439 F.2d 1237, 1243, 169 USPQ 429, 4 (CCPA 1971)
In re Gazave, 379 F.2d 973, 978, 154 USPQ 92, 96 (CCPA 1967)
In re Hogan, 559 F.2d 595, 605, 194 USPQ 527, 5 (CCPA 1977)
In re Irons 52 CCPA 938, 340 F.2d 974, 144 USPQ 3 (1965)
In re Jolles, 628 F.2d 1322, 206 USPQ 885 (CCPA 1980)
In re Marzocchi, 439 F.2d 220, 223, 169 USPQ 367, 3 (CCPA 1971)

\*\*\*\* The other notations used herein are to the Petitioner's original patent specification (OS) to the Patent Office; the Appeal Brief to the Board of Patent Appeals and Interferences (APB); the Board Decision (D); and the Appendix was submitted with the Appeal Brief to the US Court of Appeals For The Federal Circuit (A).



In re Morris 127 F.3d 1048, 1053-56, 44 USPQ2d 101027-30 (Fed. Cir. 1997)
In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 14 (Fed. Cir. 1992)
In re Prater 415 F.2d 1393, 162 USPQ 541 (CCPA 1969)
In re Swartz [00-1107, 00-1108]
In re Vaeck, 947 F.2d 488, 495, 20 USPQ2d 1438, 14 (Fed. Cir. 1991)
In re Wands 858 F.2d 731, 737, 8 USPQ2d 1400, 14 (Fed. Cir. 1988)
In re Wertheim [541 F.2d at 263, 191 USPQ at 97]
In re Ziegler 992 F.2d 1197, 1200, 26 USPQ2d 1600, 16 (Fed. Cir. 1993)
In re Zletz 893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989)
In re Zurko 142 F.3d 1447, 1449, 46 USPQ2d 1691, 16 (Fed. Cir.), cert. granted, 119 S. Ct. 401 (1998)
Krantz and Croix v. Olin, 148 USPQ 659, 661-62 (CCPA 1966)
Leasco Data Processing Equip. Corp. v. Maxwell, 4 F.2d 1326 (2d Cir. 1972)
Lewis v. Bours, 119 Wn.2d 667, 670, 1992
Marbury v. Madison, 1 Cranch 137, 177 (1803)
Marino v. Hyatt Corporation, 793 F.2d 427, 430 (1st Cir. 1986)
Mayberry v. Penna., 91 S.8.
Morrill v. Tong, 390 Mass. 1207 129 (1983)
Newman v. Quigg, 877 F.2d 1575, 1581, 11 USPQ2d 1340, 1345 (Fed. Cir. 1989)
Niehoff v. Sahagian, 103 A.2d 211 (Me. 1954)
Peckham v. Continental Casualty Ins. Co., 895 F.2d 8836 (1st Cir. 1990)
People v. Pierce, 66 Cal. 2d 53 (1967)
Pizarro v. Hotels Concorde Int'l, C.A., 907 F.2d 1256 (1st Cir. 1990)

Rannard v. Lockheed Aircraft Corp., 26 Cal. 2d 1 (1945)
Raytheon Company V. Roper Corporation, U.S.C. Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592
Sawtelle v. Farrell, 70 F.3d 1381, 1387 (1st Cir. 1995)
Standard Oil Co. (Indiana) v. Montedison, S.P.A., 6 F.2d 356, 375, 212 USPQ 327, 344 (3rd Cir. 1981), <i>cert. denied</i> , 456 U.S. 915, 102 S.Ct. 1769, 72 L.Ed.2d 1 (1982)
U. S. v. Price, 86 S. Ct. 1152, 1157
U.S. Rep., 404, 520-521 (1972)
United States v. Nixon, 418 U.S. 683 (1974)
Weiss v. Weiss, 436 N.Y.S. 2d. 862, 52 N.Y. 2d. 1 (1981)
Wood v. Strickland, 95 S Ct 952

#### Selected Published Peer-Reviewed Author

Swartz, M., <i>Fusion Technology</i> , 22, 2, 296-300, 1992
Swartz, M., <i>Fusion Technology</i> , 26, 4T, 74-77, 1994
Swartz, M., Vol. 4: "Proceedings: ICCF4", sponsored EPRI and the Office of Naval Research, 1994
Swartz, M., <i>Fusion Technology</i> , 32, 126-130, 1997
Swartz, M., <i>Journal of New Energy</i> , 1, 4, 26-33, 1997
MIT RLE Progress Report, P. Hagelstein, M. Swartz, 1, 1, 1-13 (1997)
Swartz, M., <i>Transactions of the American Nuclear Association</i> , Nashville, Tenn, 1998 Meeting (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-1 1998

## CONCISE STATEMENT OF MATERIAL FACTS

### I

#### Fact 1 - '457 Teaches and Claims a Calorimeter

The Petitioner filed S.N. 08-406,457 ("the '457 application"), the subject matter of the above-entitled action, which teaches and claims a novel calorimeter (heat-measuring instrument) used to examine heat-generating metal samples. The invention precisely, and with calibration, measures the heat which the samples produce when electricity is driven through them [A183 in '457, A72 in Swartz (97), A178; A193-195, and A261-268]. The "activity" of each sample is the ratio of the output heat power given off by the sample compared to the electrical input power delivered [Appendix G, A183, A72; also A178; and page OS17, lines 2-12]. '457 produces scientific data characterizing each sample [Appendix H, A184, A76].

### II

#### Fact 2 - '457 Has Operability

Independent Claim 13 (Appendix E, A188) claims the method of measuring the heat production of a sample. It specifically claims "holding said sample" [OS page 17, lines 2-12], "loading ... said material" [OS page 16, lines 11-14, and in Swartz (1992; A92), Swartz (1993), Swartz (1994; A97)], "thermally monitoring" [OS page 18, line 3 through page 19, line 3, and also page 10, lines 14-18] and "deriving the thermal response of said sample by computational means including accounting for the mass and temperature distribution of at least one barrier between said rings" [OS page 22, lines 3-11 and line 18 through page 23, line 14, also page 23, lines 21 through page 24, line 6, and lines 14-17, and page 25, lines 4-11], and deriving an optimum drive condition of said sample" [OS page 15, lines 15-20, and page 23, lines 14-17].

III

**Fact 3 - Peer-Reviewed Evidence Disputes  
The Office**

At the time of filing, the inventor came forward with solid substantial, timely, evidence of operativeness and utility proven by peer-reviewed publication ["Swartz(97)"; A71, *Fusion Technology*, 31, 63-74; A71, also A83, A90]. Thereafter, Applicant (now Petitioner) submitted this sterling relevant reference eleven (11) times to the Office [A10-A13, Table 1 (A18)]. It was discussed in the Appeal Brief to the Board on page 40, in the Reply Brief including on page 6-7, 9-10, 19, 24-25, and in the Second Reply Brief including on pages 3-4. It was submitted and received, .... and ignored and even systematically removed from the file [A197, A240, A323-325, A327-A330, A339]. To this day, Swartz(97) is not listed on the Office's first Docket (A3) nor on the Office's revised "second Docket" (A6), nor is it even listed --let alone substantively addressed-- in the Decision which began this Appeal (Appendix C). American citizens, and America, deserve better than that from those who swear allegiance to the Consitution.

IV

**Fact 4 - Declarations Dispute The Office**

Several Declarations  
[A52, A55, A56, A58, A61, A28, A32, A36, A38, A44, A47, A49, A50)] which timely delivered with substantive arguments to the Examiner's rejections. The Declarations were received [A10-A13, A18] and they substantially and fully addressed all matters and issues criticized by the Office and explicitly rebutted each and every issue with evidence. Some of the Declarants rebutted what the Office falsely and egregiously claimed they said. Discussion of the Declarations was made in the Appeal Brief

and Reply Brief to the Board [Appeal Brief pages 40-43, Reply Brief pages 14, 15, 25-26, Second Reply page 3] and in other responses to the Examiner [A198, A248-A249, 256, 285-286, 298, A319-320, A329, A334-335, A342-343, A358-360, A380-385]. Nonetheless, the Declarations remain substantively ignored ... even in the face of Orders to address them and the Briefs which did refer to them [Appendix D].

## V

### Fact 7 - The Office Relies On Cloth Cut Of Other Art

Deviating from the normal standards of review, the Office (and Decision) has misread the claims of '457. Proof: Although '457 is a novel calorimeter (a heat-measuring instrument) [A183 in '457, A72 in Swartz(97), A178; also A193-195, and A261-268] and a "method to ... characterize (a) sample", absolutely none of the words which encompass the invention and the claims are mentioned in the Decision. Instead, the Decision of the Board inaccurately substitutes the words "cold fusion" repeatedly for the words "heat production", and for the word "activity", and for the words "electric power drive", and for "thermally monitoring", "thermal output", "optimum drive condition", and even for "multiring calorimeter". Documenting this forever, the Decision refers to "cold fusion" eighty-six (86) times, but the words which define '457 not at all.

The standards of review require that the Decision be based upon the invention which measures heat release and the activity of a sample. Instead, here, the Office ignored the evidence, ignored the invention, and "hand waved" away from '457, instead pointing to 'cold fusion' as if it were a forbidden word. It is merely, one of several scientific and

research environments in which the present invention finds utility. Only by such improper action as systematically ignoring evidence can the Office and Board purport that this invention has no utility.

## REASONS FOR GRANTING THE WRIT

### I

Briefly, the gravamen of this case is that the writ should be granted for any of several reasons, including failure of the Office to comply with the authority of Article I, Section 8, Clause 8:

### II

The writ should be granted because, as the Affiants and Amici Curiae declare, the Petitioner that he has fully conformed with, and satisfied, the requirements of §101 of the Patent Act and met at least one (1) stated objective [*Standard Oil Co. (Indiana) v. Montedison, S.P.A.*, 664 F.2d 356, 375, 212 USPQ 327, 344 (3rd Cir. 1981), cert. denied, 456 U.S. 915, 102 S.Ct. 1769, 72 L.Ed.2d 174 (1982); *E.I. du Pont de Nemours & Co. v. Berkley & Co.*, 620 F.2d 1247, 1258 n.10, 1260 n.17, 205 USPQ 1,8n10, 10n.17 (8th Cir. 1980); *Krantz and Croix v. Olin*, 148 USPQ 659, 661-62 (CCPA 1966); *Chisum on Patents*, 4:04[4] [1983]; *Raytheon Company v. Roper Corporation*, U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592].

### III

The writ should be granted because the Office has systematically ignored timely-submitted peer-reviewed proof of operability and enablement at the time of the initial filing [Swartz (97); A136]. In most free

countries, eleven (11) date stamps of the Patent Office is enough impeccable and undeniable evidence to demonstrate submission and receipt of said peer-reviewed publication (A136).

#### IV

The writ should be granted because the Office has ignored both the standards of review and its own rules, including the standard of review which requires the Office to provide reason to doubt the objective truth of any of the Declarants' statements [Enviroitech Corp. v. Al George, Inc., 730 F.2d 753, 762, 221 USPQ 473, 480 (Fed. Cir. 1984)].

#### V

The writ should be granted because the Office has disingenuously relied upon reference to art cut of a cloth other than the above-entitled specification and claims. Thus, the Office's position is weak -- which should dictate allowance of the present invention.

### QUESTIONS PRESENTED

**What is the constitutional obligation of this court to enforce the protection of Article I, Section 8, Clause 8, enabled by 35 U.S.C. §112 and 35 U.S.C. §101, in the face of a purported but unproven "unanimous" opinion?**

#### I

The writ should be granted because the Office has failed to give substantial weight to un rebutted skilled-in-the-art Declarants (including Rotegard(A47), Swartz(A28), Bass(A32), Fox(A44 and A56), Mallove(A38 and A58), Chubb (A52), Verner (A36), Kurzweil(A51), Rothwell (A61), Ahern(A50), Schaffer (A55), and

Miles(A49)) whose testimony rebuts and refutes the Office -- including those Declarants who wrote that they have been misquoted by the Office. The Declarations factually confirm proof of utility and operability and systematic disingenuousness by the Office. Said submitted un rebutted Declarations have been ignored regarding their probative content -- even in the light of Orders to address them and their accompanying Briefs [Appendix D]. The Petitioner undertook the full burden coming forward (A10-A13,A18): with his evidence and Declarations (A52,A55,A56,A58,A61, A28,A32,A36,A38,A44,A47, A49,A50) as required: Swartz(97) and the Declarations have not been rebutted or even substantively addressed by the Office despite that the Office's burden is only discharged by the Office by "presenting evidence or reasons why persons skilled-in-the-art would not recognize in the disclosure a description of the invention defined by the claims" [Wertheim, 541 F.2d at 263, 191 USPQ at 97]. That was NOT done in this case, either by the Office or the Board.

The writ should be granted because the Office rejects the reasoning of *In re Oetiker*, 977 F.2d at 1445, 24 USPQ2d at 1444]. The Board (and Office) must substantively and fully respond to the probative witnesses (A52,A55,A56,A58,A61, A28,A32,A36,A38,A44,A47, A49,A50), because Applicant undertook the full burden coming forward (A10-A13,A18). The Decision should have responded to the un rebutted Declarations, but did not.

## II

**All Affiants --Even Those Cited by the Office--  
Dispute the Office**

The writ should be granted because the Declarants, and *Amici Curiae*, prove that the Petitioner taught material understood by



persons with normal engineering skill. The affiants and *Amici Curiae* declare that as of the filing date, scientists skilled-in-the-art considered loading, and heat measurement to be real, as was taught correctly in the original specification and claims. Thus, the Decision rejects the reasoning of *In re Morris* [127 F.3d 1048, 1053-56, 44 USPQ2d 1023, 1027-30 (Fed. Cir. 1997)] because the interpretation of operability, utility, and enablement is determined by those skilled-in-the-art.

The Office rejects the reasoning of *In re Marzocchi*, 439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971)] because it has no reason to doubt the objective truth of the statements contained in the written description [*In re Brana*, 51 F.3d at 1566, 34 USPQ2d at 1441 ("Only after the PTO provides evidence showing that one of ordinary skill in the art would reasonably doubt the asserted utility does the burden shift to the applicant to provide rebuttal evidence sufficient to convince such a person of the invention's asserted utility"); *In re Marzocchi*] ("[A] specification disclosure which contains a teaching of the manner and process of making and using the invention in terms which correspond in scope to those used in describing and defining the subject matter sought to be patented must be taken as in compliance with the enabling requirement of the first paragraph of §112 unless there is reason to doubt the objective truth of the statements contained therein which must be relied on for enabling support:").

The Decision rejects the reasoning of *In re Zurko* [142 F.3d 1447, 1449, 46 USPQ2d 1691, 1693 (Fed. Cir.), cert. granted, 119 S. Ct. 401 (1998)] because utility is a fact question [*Raytheon Company v. Roper Corporation*, U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592], and one which the Court should review for clear error [*Cross v. Iizuka*, 753 F.2d 1040, 1044 n.7, 224 USPQ 739, 742 n.7 (Fed. Cir. 1985)].

### III

How many Declarants does it take to overcome the Office's unsubstantiated rejection?

The writ should be granted because the Declarants have been improperly relegated to "opinion"-status without an adequate explanation of how they failed to overcome the *prima facie* case initially established by the Office and then copiously overcome by the Petitioner (then Applicant) pursuant 1.131 (a)(1) which states that "When ... a patent ... is rejected ... on reference ... to a printed publication, the inventor of the subject matter of the rejected claim ... may submit an appropriate oath or declaration to overcome the patent or publication." Applicant discussed the Declarations in his Responses to the Examiner and to the Board [A198, A248-A249, 256, 285-286, 298, A319-320, A329, A334-335, A342-343, A358-360, A380-385]. Thus, the Decision rejects the reasoning of *In re Alton* [94-1495, S.N. 06/483,451] because the Board has ignored the Declarations by dismissing two of them *en bloc* improperly to "opinion"-status, without an adequate explanation of how the declarations failed to overcome the *prima facie* case initially established by the Board and refuted by the evidence including the Declarations and Swartz(97). This is an error of law.

What is the constitutional obligation of this court to enforce the protection of Article I, Section 8, Clause 8, when peer-reviewed papers prove operability in the face of a purported but unproven "unanimous" opinion?

### I

Petitioner (then Applicant) submitted evidence because "(p)atentability is determined on the

totality of the record, by a preponderance of the evidence with due consideration to persuasiveness of argument." [Id. at 1445, 24 USPQ2d at 1444]. Supplied to the Office as evidence were 300 papers (~140 pounds; Table 2; A19; including several published by the American Nuclear Society A92, A96, A83) proving that Petitioner was correct, and the invention was correctly taught in the original specification and claims on the filing date of the application. The writ should be granted because the Office should have responded but did not. The writ should be granted because the Office was Ordered to substantively respond (A145) but did not.

The writ should be granted because the Office rejects the reasoning of *In re Hogan* [559 F.2d 595, 60S, 194 USPQ 527, 537 (CCPA 1977)]. Enablement must be judged on the original specification and claims, and Swartz, M., 1997, *Fusion Technology*, 31, 63-74 proves that Petitioner was correct, and the invention was correctly taught in the original specification and claims on the filing date of the application.

## II

Together, the Declarations and published peer-reviewed paper corroborate enablement of the present invention both *de facto* and *de jure*.

The writ should be granted because the Office rejects the reasoning of *In re Vaeck* [947 F.2d 488, 495-96, 10 USPQ2d 1438, 1444 (Fed. Cir. 1991)]. An enablement rejection under section 112, ¶1 is only appropriate where the written description fails to teach those in the art to make and use the invention as broadly as it is claimed without undue experimentation. The Decision has not met the burden of proof as to why one of ordinary skill-in-the-art would not consider the description sufficient

given the Exhibit, Swartz, M., 1997, *Fusion Technology*, 31, 63-74, submitted eleven times.

The writ should be granted because the Office rejects the reasoning of *In re Otiker*, 977 F.2d at 1445, 24 USPQ2d at 1444]. The Board (and Office) must substantively and fully respond to the probative evidence, because Applicant undertook the full burden coming forward.

### III

The writ should be granted because the Office rejects the reasoning of *In re Gazave*, 54 CCPA 1524, 379 F.2d 973, 154 USPQ 92 (1967), *In re Chilowsky* [43 CCPA 775, 229 F.2d 457, 108 USPQ 321 (1956)], and *In Re Jolles*. There was significant evidence submitted of a heat-activity-measuring method to select active materials.

"Transformation and reduction of an article "to a different state or thing" is the clue to the patentability of a process claim that does not include particular machines."

[*Gottschalk v. Benson*, 409 U.S. 63 (1972), 409 U.S. 63, No. 71-485]

"Industrial processes such as this ["a physical and chemical process (which involves) the transformation of an article ... into a different state or thing"] are the types which have historically been eligible to receive the protection of our patent laws. [450 U.S. 175, 185]"

[*Diamond v. Diehr*, 450 U.S. 175 (1981)]

**Whether The Office Corrected Its Behavior Of Systematic Violations Of 18 U.S.C. §1001 after Petitioner contacted this court:**

I

**False Statements Or Writings Of Temperature And Voltage.**

The writ should be granted because the Office has systematically --under color of federal law-- made material false statements undeniably contradicted by the original specification and by the record (Appendix F; also Table 3; A147). As just one example, the Decision falsely states "*there is no disclosure . . . of a specific operative embodiment . . . including . . . temperature*" [pages 25,26]. However, this is untruthful because temperature is discussed in the original specification on page 18, line 3 through page 19, line 3. Temperature calculations are discussed on page 22, line 18 through page 23, lines 14, and page 15, lines 15-20. As another example, the Decision falsely states "*there is no disclosure . . . of a specific operative embodiment . . . including . . . voltage*" [pages 25,26]. However, this is contradicted because the computed sampling of voltage is discussed in the original specification on page 15, lines 15-20. Voltage is discussed on page 26, line 19 through page 27, line 4. Figures 5 shows the voltage. Figures 4, 5, 6 in the OS show the voltage indirectly through the power and power gain (which are the more important engineering parameters).

**The Office's Disingenuous Statements Are Inconsistent With Accuracy, Precision And Accountability**

The writ should be granted because the Office ignores 18 U.S.C. §1001. The submitted Declarations, and Swartz(97), and

the copious Exhibits were received (A10-A13, A18), and therefore in their light the Decision is composed of false statements known to be false *a priori* [*Niehof v. Sahagian*, 103 A.2d 211 (Me. 1954)]. This is a breach of duty [*Rannard v. Lockheed Aircraft Corp.*, 26 Cal. 2d 149 (1945)]. The Decision ignores 18 U.S.C. §1001 by reference to inaccurate statements and even falsified PFC-Phase II data previously brought to the attention of the Office in detail [A14-18] and to the attention of the federal court [00-1107, also 00-1108 in the Reply Brief on pages 1-11]. The Decision thus incorporates reference to altered data in a proceeding wherein the law authorizes the administration of an oath [*People v. Pierce*, 66 Cal. 2d 53 (1967)], and as such the Decision rejects the reasoning of many courts [*U.S. v. Price*, 86 S. Ct. 1152, 1157, footnote 7; *Sawtelle v. Farrell*, 70 F.3d 1381, 1387 (1st Cir. 1995); *Leaseo Data Processing Equip. Corp. v. Maxwell*, 468 F.2d 1326 (2d Cir. 1972); *Pizarro v. Hotels Concorde Int'l, C.A.*, 907 F.2d 1256 (1st Cir. 1990); *Peckham v. Continental Casualty Ins. Co.*, 895 F.2d 830, 836 (1st Cir. 1990); *Donatelli v. National Hockey League*, 893 F.2d 459, 465 (1st Cir. 1990)].

## II

At this time, the Office has not shown one iota of accountability, nor has it corrected its behavior of violating 18 U.S.C. §1001. In fact, the Office has accelerated and increased its notorious behavior in this matter. In several other patent applications, the disingenuousness of the Office has significantly increased following the lack of response of this court.

**Whether The Office Corrected Its Disingenuous Behavior Of Citing Art Cut Of Cloth Made Other Than The Present Invention after Petitioner contacted this court**

**I**

**The Office Is Inaccurate And Disingenuous About The Subject Matter**

The writ should be granted because even though an invention (structure, operation, composition) is defined by the claims and specification, the Office's Decision is only about art cut of cloth made of other than the present invention and claims. Only two sentences in the entire Decision accurately discuss the present invention, and they are direct quotes from the original specification. As a result, none of the Decision of Board (28 pages) pertains to the present invention but rather to the Office's now fourteen (14) year long attack on cold fusion and those unfortunate American citizens who have dared to research and develop it as an alternative energy source for America - even after the 911 Atrocities. It is only by the Office calling the present invention "cold fusion" instead of a novel multiring calorimeter and method to measure heat producing activity, that the Office can get away with its patent nonsense such as claiming that heat measurement is an "unattainable result" when Appendix H from the record below heralds otherwise.

As the Amicus Curiae Eugene F. Mallove, Sc.D has stated,

"The most notable characteristic of the attack against the Swartz patent application at hand is its stale fixation with misrepresented events of 1989, its citation of erroneous reports, and its continued argument from supposed

authority, rather than from evolved science and meticulous experiment."

## II

The Decisions' continual referral to "cold fusion" rather than '457 is systematic prejudice because the present invention is not "cold fusion", but rather, '457 is a means to evaluate, to measure, a sample's heat-producing activity. It could detect cold fusion, and it could characterize samples used for cold fusion. It also makes better home water heaters, and safer more efficient energy systems.

Thus, the writ should be granted because the Office is inconsistent with the standards of review, with case law, and remains in utter defiance of the controlling authority of the Constitution of the United States.

The Office rejects the reasoning of *In re Morris* [127 F.3d 1048, 1053-56, 44 USPQ2d 1023, 1027-30 (Fed. Cir. 1997)] that operability and utility are predicated upon the opinion of those skilled-in-the-art, including the silenced Declarants and Amicus Curiae.

The Office rejects the reasoning of *In re Zletz* [893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989)] because this specification explicitly stated that the claims involve an invention used to measure heat-producing activity of a sample.

The Office rejects the reasoning of *In re Prater* [415 F.2d 1393, 162 USPQ 541 (CCPA 1969)] because the Office relies solely on art cut of a cloth other than the present specification and claims.

The Office rejects the reasoning of *Newman v. Quigg* [877 F.2d 1575, 1581, 11 USPQ2d 1340, 1345 (Fed. Cir. 1989)] because the measurement of heat generation of a sample has absolutely nothing to do with perpetual motion [cf. Appendix H].



### III

At this time, the Office has not shown one iota of accountability, nor has it corrected its behavior of citing art out of cloth made other than the invention under consideration. In fact, the Office has accelerated and increased its notorious behavior in this matter. In several other patent applications, the disingenuousness of the Office has increased following the lack of response of this court. These actions herald bias rather than compliance with the normal standards of review for patentability statutes arising under Art. I, §8, cl. 8.

**Whether the Office Corrected its Behavior and Has complied with the authority of the United States Constitution and Congressional will after Petitioner contacted this court.**

#### I

The writ should be granted because the Office rejects the controlling authority of the United States Constitution for patentability under Art. I, §8, cl. 8. This is especially serious because inventions involving energy efficiency and energy monitoring have great utility during War.

#### II

The writ should be granted because the Office rejects the controlling authority of Article I, Section 2. The Office has denied due process, has not following harmonization, and has ignored Equal protection under the law, even though Petitioner is entitled to the privileges and immunities of citizens in the other states. A dual-tiered system is presently operated by the Office, rather than a single uniform just approach. This does not comport with any notion of fair play of justice [The 14th Amendment; also 28 U.S. Code Section 144, *Mayberry v. Penna.*, 91 S.8.; *Bloom v. Illinois*, 88 Ct. 499 S.Ct. 1477; *Duncan v.*

*Louisiana*, 88 S.Ct.1444; and the American Bar Association's comments which say that the PTO should be "technologically neutral" = <http://www.uspto.gov/web/offices/com/sol/comments/utilitywa/aba.pdf>.

### III

Congress has spoken to "encourage progress" [*Diamond v. Chakrabarty*] and to encourage ingenuity [447 U.S. 303, 309] with patentable statutory subject matter to include **anything under the sun that is made by man**"

[S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)].

On one hand, the Office claims that energy measurement and efficiency has no utility during a time of War. On the other hand, the Office continues to issue patents using astrology to predict lottery numbers, claiming that they have unique "operability" and "utility".

## CONCLUSION

Now comes the petitioner who requests rehearing of his petition for certiorari for the above-entitled action by this court. The petitioner, *pro se*, has failed to present a very important issue. The petitioner only addressed issues in the prism of having this court simply take a second look at a case decided below. In fact, this court should reconsider why it should take jurisdiction because the following issues directly and indirectly effect all citizens of the United States of America protected by the United States Constitution:

Patents are based on evidence and not the possible, or putative, "unanimous" opinion of the community. The standards of review require not rejecting evidence, even when there is putative unanimous opinion. If evidence is ignored and surmounted by opinion, then one interpretation is that the court has fashioned legal treatment consisting of making decisions first and then using opinion in place of fact in an attempt to make a, necessarily flawed, decision without foundation.

This case may appear to be *de minimis* because it involves measurement of small amounts of heat energy, but it is of great and compelling importance when measured by the constitutional mandate of Art. I, §8, cl. 8, or in the light of the number of people dependent upon energy monitoring, efficiency and utilization, and upon alternative energy sources in a time of War.

The above-entitled specification, '457, [A148] taught a written description of a multiring calorimeter, and Petitioner set forth the best mode contemplated, and then distinctly pointed out and claimed the subject matter which constitutes the invention. Those in the field wrote Affidavits and Amicus Briefs declaring that the Petitioner wrote an adequate and enabling disclosure, and thus complied and conformed with 35 U.S.C. §112, first paragraph, of the Patent Act.

Validation is proven by the testimony of those skilled-in-the-art as was the case here [e.g. Rotegard(A47), Swartz(A28), Bass(A32), Fox(A44 and A56), Mallove(A38 and A58), Chubb (A52), Verner (A36), Kurzweil(A51), Rothwell (A61), Ahern(A50), Schaffer (A55), and Miles(A49)]. Validation is proven by

Affiants, and in this case, the unrebutted Affiants support the Petitioner and have rendered testimony that there is enablement (a question of law; *In re Fouché*).

As the Declarants have noted, the Office's claim that there is a "lack of operability" under 35 U.S.C. §112, ¶1 and "lack of utility" under 35 U.S.C. §101 has only been made by the Office systematically ignoring the original specification and claims, and then by ignoring the timely-submitted unrebutted Declarations (A52, A55, A56, A58, A61, A28, A32, A36, A38, A44, A47, A49, A50) and the Exhibits [~140 pounds, A19, A71]. Finally, the Office has had to ignore its own rules and even previous Orders by the Board demanding a response by the Office to the Declarants regarding material matters of fact (operability and utility). But there has been no response by the Office.

In summary, the peer-reviewed publications, especially Swartz(97), and the unrebutted Declarants (A52, A55, A56, A58, A61, A28, A32, A36, A38, A44, A47, A49, A50) each herald operability and utility. Taken together, they confirm decisively and forever that the present method to measure heat producing activity of a sample, '457, has enablement both *de facto* and *de jure*.

The Office's actions have required someone there to make numerous false statements all contradicted by record [Table 3; A147]. False statements do not belong in Federal documents. The paucity of ethics also proves that the Office's notions are quite weak, heralding again the need for allowance of the present invention.

This Petition should be allowed because Congressional intention and meaning, and that of the statute, was to include an invention involving energy efficiency and monitoring. Despite the Office's malicious notions targeting those who work for US security, in science, validation comes through peer-review as was the case here [e.g. Swartz: M., 1997, *Fusion Technology*, 31, 63-74].

This Petition should be allowed because this court has final supervisory jurisdiction over the subject matter. This court should consider this immediately and correct this situation by simply directing the Respondents to abide by their own Rules and standards of review.

The Petitioner regrets any inadequacies in this Petition. This Court has ruled that any *pro se* litigant is entitled to less stringent standards [U.S. Rep volume 404, pages 520-521 (1972)].

Wherefore, Petitioner respectfully requests that for the above reasons that this petition for writ of certiorari be reheard and then granted.

Very respectfully submitted,  
Mitchell Swartz, ScD, MD *pro se*, Petitioner  
P.O. Box 81135  
Wellesley Hills, MA  
02481-0001  
September 1, 2003



**APPENDIX J -  
Excerpt of Recent Independent Letter to Mr.  
Al Gore about Petitioner's Invention Shown to  
the Public August 24-28, 2003 at  
the Massachusetts Institute of Technology  
(Camb., MA)**

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8200A Bull's Ferry Rd. #2  
North Bergen, NJ 07047  
201.861.7179

September 1, 2003

Mr. Al Gore

Dear Al,

... My more strategic issue concerns energy. I've included some articles with the same kind of investigative details about First Energy and their links to the current "ruling faction" in Washington. However, I've also included the list of attendees from last week's "10th International Conference on Cold Fusion" and highlighted some of the names, titles and entities the attendees represented. No, cold fusion is not yet ready for full-scale commercialization. Yes, cold fusion is real and deserves research funding. Interestingly, Dr. Peter Hagelstein of MIT was the conference chair. He did a magnificent job. There was even a "field trip" from the hotel where the conference was held in Cambridge, to Room 568 in Building 36 at MIT where a live "overunity" (more-power-out-than-in) cold fusion experiment was hosted by Dr. Mitchell Swartz.

I learned first-hand at this conference that the very academic "cold fusion community" is far more interested in determining the physical and chemical equations in the languages they know than they are in understanding how the simple spark has enough energy in it to melt aluminum. They appear to go to great lengths to overcomplicate things, but that is

understandable, since it conforms to the paradigms they are most accustomed to. .... Two names on the conference attendee list are from Toyota Central R & D Labs. This was most encouraging, since Toyota funded Fleischmann and Pons in France after they were "run out of town" by the American Physical Society in 1989-1990. In my letter of 7/31 to Mr. Toshiaki Taguchi, president & CEO of Toyota Motor North America, I asked Toyota to fund research into "new energy" in a new way, using a recently updated version of the artificial intelligence application that IBM used to defeat Gary Kasparov in chess in the mid-'90's. My proposed approach would include analyzing the data from ALL new energy experiments (at least as many as possible that are published) to factor out the "least common denominator(s)" in them.

Let's apply a methodology with a proven track record for determining optimal logical strategies to the search for an appropriate energy alternative to oil, gas and current-day fission nuclear power, none of which are clean, safe or economical.

Yours truly,

John Miranda, President  
ZerEpoint®



**APPENDIX K -  
Excerpts of Affiants Supporting  
Petitioner  
from the Record Below**

**Fact 5 - The Office's Witnesses Dispute The Office**

The Office's own witness, inaccurately cited by the Office, Dr. Michael Schaffer (A55, 8/7/01) said,

"I do not see how anyone could construe anything that I wrote at Scientific American's site to imply that there is "no utility" in cold fusion, much less in instruments that might be used in cold fusion and other scientific experiments. ... It appears that the Board of Patent Appeals considers me an expert on this subject. As an expert ... I would agree [Dr. Swartz's invention] ... does have utility".

The Office's own witness, Jed Rothwell (A61), inaccurately cited by the Office, said,

"None of my statements referred to the functionality, operability or performance of Dr. Swartz's multiring calorimeter. Nothing I have published or heard from scientists casts doubt on the claimed capabilities of Dr. Swartz's invention. ... I interviewed many people and some scientists, such as Dr. Michael McKubre, were enthusiastic about Dr. Swartz's device. Therefore I stated that it may well be a "superb research tool" in the article quoted."

Dr. Scott Chubb (A52, 8/13/2001) said,

"Dr. Swartz has invented an important, new device, whose purpose has value for measuring activity of a sample."

Dr. Eugene F. Mallove said (A58, 8/13/2001),

"The activity of a sample is an important issue and its measurement has great utility... The invention does not require the reproducibility of cold fusion phenomena... Rothwell actually praises ('457 stating) 'This could be a superb research tool...':

Dr. Hal Fox (A56, 8/13/2001) said,

"... the method of measuring the activity of sample in the above-entitled action is clever, not obvious, and is an important invention with utility."

No.

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IN THE  
Supreme Court of the United States

Mitchell R. Swartz, *Petitioner*

v.

Q. Todd Dickinson, Director of the USPTO,  
Commissioner of Patents and Trademarks,  
*Respondent*

On Petition For A Writ Of Certiorari  
To United States Court Of Appeals  
For The Federal Circuit  
02 - 1240  
(Serial No.: 08-406,457)

IN RE MITCHELL R. SWARTZ

Appeal from the Board of Patent Appeals  
and Interferences  
(No. 98-2593)

PETITION FOR A WRIT OF CERTIORARI

Mitchell R. Swartz, ScD, MD, EE  
P.O. Box 81135  
Wellesley Hills, MA 02481-0001

February 21, 2003

### QUESTIONS PRESENTED

Did the Decision Misread the Claims of the Present Application under 35 U.S.C. §101 and 35 U.S.C. §112.

Whether The Office Failed The Standards Of Review By Ignoring Testimony of Declarants Skilled-in-the-art under 35 U.S.C. §112 and 35 U.S.C. §101.

Whether The Office Failed The Standards Of Review By Ignoring Evidence Including *Fusion Technology '97* under 35 U.S.C. §112 and 35 U.S.C. §101.

Whether The Office Failed The Standards Of Review And 18 U.S.C. §1001 By Making False Statements or Writings of Temperature and Voltage.

Whether The Office Has Complied with the Authority of the United States Constitution and Congressional Will.

## LIST OF PARTIES

Not all parties appear in the caption of the case on the cover page.

The list of all parties proceedings in the Court is as follows:

Petitioner, previously Applicant then Appellant, Dr. Mitchell Swartz, P.O. Box 81135, Wellesley Hills, MA 02481-0001.

Respondent is the Office of Patent and Trademarks [the U.S. Patent and Trademark Office and the Board of Patent Appeals and Interferences, hereinafter "Office"]. The Examiner has been Mr. Daniel Wasil. Mr. Q. Todd Dickinson, is Director of the USPTO, and Commissioner of Patents and Trademarks.

The Respondent's attorney of record is Attorney Thomas Krause, Associate Solicitor, 2121 Crystal Drive, P.O. Box 15667, Arlington, Virginia, 22215. With him has been John Whealan, Solicitor, U.S. Patent and Trademark Office, of Arlington, Virginia, and Stephen Walsh.

The *amici curiae* who have submitted Briefs to this court previously in 00-1191, and who submitted their unentered briefs to the court of appeals in the above-entitled case after receiving permission to enter said brief from the respondents, are

Eugene F. Mallove, Sc.D., *amicus curiae*, New Energy Research Laboratory (NERL), P.O. Box 2816, Concord, New Hampshire 03302-2816

Scott R. Chubb, Ph.D., *amicus curiae*, Research Systems, Inc., 9822 Pebble Weigh CT., Burke, VA 220215-3378

Hal Fox, Ph.D., *amicus curiae*, Engineer, Editor, 3084 E. 3300 South, Salt Lake City, UT 84109-2154

The panel in the court below, U.S. Court of Appeals for the Federal Circuit, were Judges Clevenger, Friedman and Prost.

## Table Of Contents Of Petition

	Page
Questions Presented	i
List Of Parties	ii
Table Of Contents	iii
Table Of Authorities Cited	v
Opinions Below	x
Jurisdiction	x
Constitutional And Statutory Provisions Involved	xi
Basis Of Federal Jurisdiction In The Court Of First Instance	xii
<b>CONCISE STATEMENT OF THE MATERIAL FACTS</b>	1
<b>REASONS FOR GRANTING THE WRIT</b>	8
<b>QUESTIONS PRESENTED</b>	11
Did the Decision Misread the Claims of the Present Application under 35 U.S.C. §101 and 35 U.S.C. §112.	11
Whether The Office Failed The Standards Of Review By Ignoring Testimony of Declarants Skilled-in-the-art under 35 U.S.C. §112 and 35 U.S.C. §101.	15

Whether The Office Failed The Standards Of Review By Ignoring evidence Including <i>Fusion Technology '97</i> under 35 U.S.C. §112 and 35 U.S.C. §101.	20
Whether The Office Failed The Standards Of Review And 18 U.S.C. §1001 By making false statements or writings of Temperature and Voltage.	23
Whether The Office Has complied with the authority of the United States Constitution and Congressional will.	25
CONCLUSION	28
APPENDIX A : Opinion of the United States court of appeals	32
APPENDIX B : Order about Rehearing denying rehearing	36
APPENDIX C : Claims of Subject Matter	37
APPENDIX D : Multiring Calorimeter	38
APPENDIX E : Output of Multiring Calorimeter	39

## Table of Authorities

### Selected Statutes

U.S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952) .....	4,26
425 U.S. 219, 226 .....	9

### Selected Federal Case Law

<i>Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics</i> .....	26
<i>Bloom v. Illinois</i> , 88 Ct. 499 S.Ct. 1477 .....	26
<i>Bonito Boats, Inc. v. Thunder Craft Boats, Inc.</i> , 489 U.S. 141 (1989), 489 U.S. 141, No. 87-1346, quoting <i>Graham v. John Deere Co. of Kansas City</i> , 383 U.S. 1, 6 (1966) .....	28
<i>Chelebda v. H.E. Fortuna &amp; Brothers Inc.</i> 609 F.2d 1022 (1st Cir. 1979) .....	19
<i>Chisum on Patents</i> , 4.04[4] [1983] .....	9
<i>Cross v. Iizuka</i> , 753 F.2d 1040, 1044 n.7, 224 USPQ 739, 742 n.7 (Fed. Cir. 1985) .....	18
<i>Diamond v. Chakrabarty</i> , 447 U.S. 303 (1980), 447 U.S. 303, No. 79-136, quoting <i>DeepSouth Packing Co. v. Laitram Corp.</i> , 406 U.S. 518, 530-531 (1972) .....	26,29,30
<i>Diamond v. Diehr</i> , 450 U.S. 175 (1981), 450 U.S. 175, No. 79-1112, Dec. March 3, 1981 .....	21
<i>Donatelli v. National Hockey League</i> , 893 F.2 459, 465 (1st Cir. 1990))] .....	24
<i>Duncan v. Louisiana</i> , 88 S.Ct. 1444 .....	26
<i>E.I. du Pont de Nemours &amp; Co. v. Berkley &amp; Co.</i> , 620 F.2d 1247, 1258 n.10, 1260 n.17, 205 USPQ 1,8n10,10n.17 (8th Cir. 1980) .....	9



Environtech Corp. v. Al George, Inc., 730 F.2d 753, 762, 221 USPQ 473, 480 (Fed. Cir. 1984)	10,18
Ex parte Gray [10 USPQ2d 1922, 1928 (Bd. Pat. App. & Inter. 1989)]	18
Ex parte Porter 25 USPQ2d 1144, 1147 (Bd. of Pat. App. & Inter. 1992)	19
Ex parte Forman, 230 USPQ 546, 547 (Bd. Pat. App. & Int. 1986)	21
Frontiero v. Richardson, 93 S.Ct. 1736, 411 U.S. 677	26,27
Gamez v. Toledo,	26
Gass v. Lopez, 95 S. Ct 729;	26
Gottschalk v. Benson [409 U.S. 63 (1972), 409 U.S. 63, No. 71-485]	23
Graham v. John Deere Co., 383 U.S. 1, 7 -10 (1966)	29
Griffin v. Breckenridge, 91 S Ct 179D	26
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In re Chilowsky, 229 F.2d 457, 462, 168 USPQ 321, 325 (CCPA 1956)	18,22
In re Eltgroth, 419 F.2d 918, 164 USPQ 221 (CCPA 1970)	22
In re Ferens 417 F.2d 1072, 1074, 163 USPQ 609, 611 (CCPA 1969)	14
In re Fouche 439 F.2d 1237, 1243, 169 USPQ 429, 434, (CCPA 1971)	29
In re Gazave, 379 F.2d 973, 978, 154 USPQ 92, 96 (CCPA 1967)	18,22
In re Hogan, 559 F.2d 595, 605, 194 USPQ 527, 537 (CCPA 1977)	21
In re Irons 52 CCPA 938, 340 F.2d 974, 144 USPQ 351 (1965)	19
In re Jolles, 628 F.2d 1322, 206 USPQ 885 (CCPA 1980)	18,22
In re Marzocchi, 439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971)	19
In re Morris 127 F.3d 1048, 1053-56, 44 USPQ2d 1023, 1027-30 (Fed. Cir. 1997)	14,17

In re Getiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992)	8,22
In re Prater 415 F.2d 1393, 162 USPQ 541 (CCPA 1969)	14
In re Swartz [00-1107, 00-1108]	14,15
In re Vaeck, 947 F.2d 488, 495, 20 USPQ2d 1438, 1444 (Fed. Cir. 1991)	22
In re Wands 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988)	21,29
In re Wertheim [541 F.2d at 263, 191 USPQ at 97]	18
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Morrill v. Tong, 390 Mass. 1207 129 (1983)	19
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IN THE  
*Supreme Court of the United States*

On Petition For A Writ Of Certiorari  
To United States Court Of Appeals  
For The Federal Circuit  
02 - 1240 (Serial No. 08-406,457)

PETITION FOR A WRIT OF CERTIORARI

Petitioner respectfully prays that a writ of certiorari issue to review the judgment of the United States court of appeals which appears at Appendix A in the present petition.

## OPINIONS BELOW

The opinion of the court of appeals [United States Court Of Appeals For The Federal Circuit ("CAFC")] appears at Appendix A to this Petition.

## JURISDICTION

The jurisdiction of this Court is invoked under 35 U.S.C. §101 and 35 U.S.C. §112 and the United States Constitution [Article I, Section 8, Clause 8, Article III, Article IV, and the Fifth and Fourteenth Amendments], and Congress's demand for progress [*Diamond v. Chakrabarty*], ingenuity [447 U.S. 363, 369] and important patentable statutory subject matter.

Venue of this judicial district is appropriate, including in view of 35 U.S.C. §145, §146, and §306.

The date on which the court of appeals decided Petitioner's case was 11/8/02 [Appendix A \*\*\*\*-1]. A timely petition for rehearing was submitted and denied by the court of appeals on 12/3/2002 [Appendix B].

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\*\*\*-1 The other notations used herein are to the Petitioner's original patent specification (OS) to the Patent Office; the Appeal Brief to the Board of Patent Appeals and Interferences (APB); the Board Decision (D); and the Appendix was submitted with the Appeal Brief to the US Court of Appeals For The Federal Circuit (A).

## CONSTITUTIONAL AND STATUTORY PROVISIONS INVOLVED

This Petition involves a direct grant of authority made under the provision of Article I, §8, cl. 8 of the United States Constitution, which reads:

**"Congress shall have Power (t)o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries".**

This Petition has authority because Congress has "encourage(d) progress" [*Diamond v. Chakrabarty*, 447 U.S. 303 (1980), 447 U.S. 303, No. 79-136, quoting *Deepsouth Packing Co. v. Latram Corp.*, 406 U.S. 518, 530-531 (1972); *Graham v. John Deere Co.*, 383 U.S. 1, 7-10 (1966)] and ingenuity [447 U.S. 303, 309], and has precisely defined patentable statutory subject matter to include

**"an-thing under the sun that is made by man."**

[S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)].

This Petition has authority because in this case, the Office of Patents and Trademarks ("Office") has systematically ignored un rebutted timely-submitted Declarations pertaining to issues of fact, has ignored its own rules, and has created an arbitrary standard of review for patentability under color of federal law [*Osborn v. Bank of United States*, 22 U.S. (9 Wheat) 738 (1824)].

This Petition has authority because given Art. I, §8, cl. 8 then there is more than the mere possibility that a question of federal law arises sufficient to satisfy the "arising under" jurisdictional authorization of Article III. Given this and that Congress has spoken, the United States Supreme Court should consider to exercise its supervisory power [*Marbury v. Madison*, 1 Cranch 137, 177 (1803)].

This court is the Petitioner's last and only source of relief. The court of appeals has decided an important federal question that conflicts with more than a dozen relevant decisions of the US Supreme Court and other courts of appeal, and has thus far departed from the accepted and usual course of judicial proceedings.

## **BASIS OF FEDERAL JURISDICTION IN THE COURT OF FIRST INSTANCE**

Federal jurisdiction is authorized by Article I, §8, cl. 8; Article III, Article VI, the 5th and 14th Amendments, and 35 U.S.C. §145, §146, §306, §112 and §101.

In its Decision [hereinafter "Decision" held in Appeal No. 98-2593] regarding the above-entitled patent application [serial number No. 08-406,457; "the '457 application"; A148; claims A188], the Board of Patent Appeals and Interferences affirmed the rejections of the appealed claims 13, 14, 21, 22 and 24 through 39 under 35 U.S.C. §101 and 35 U.S.C. §112, first paragraph, and reversed the examiner's rejection of some of the appealed claims under Section 103 of the statute. The date of the Decision was 7/27/01. The Request for Reconsideration was denied on 12/11/01.

Petitioner thereafter filed a timely Notice of Appeal in the United States Court Of Appeals For The Federal Circuit [serial number No. 02-1240] and appealed the Decision constituting the rejection upheld by the Board of Patent Appeals and Interferences of all pending claims of the '457 application pursuant to 35 U.S.C. §112 and 35 U.S.C. §101. Petitioner, then Appellant, requested a hearing, but was denied. Four Amicus Curiae received permission to enter briefs from the Respondents, prepared their timely submitted briefs to the court were not entered, even on Motion and on Motion for Reconsideration.

On 11/8/02, the Court Of Appeals affirmed the Board's decision for putative lack of enablement under 35 U.S.C. §112, ¶1, and indefiniteness and putative lack of utility under 35 U.S.C. §101. The Appellant requested a rehearing, and it was denied on 12/3/02.

## CONCISE STATEMENT OF MATERIAL FACTS

### I

#### Fact 1 - '457 Teaches and Claims a Calorimeter and Method to Evaluation Specimens

Petitioner ["Applicant", "Inventor", "Appellant"], Mitchell Swartz, ScD, MD is a U.S. citizen and inventor who filed patent application S.N. 08-406,457 ("the '457 application") which is the subject matter of the above-entitled action. '457 teaches and claims invention of a novel calorimeter (heat-measuring instrument) and method used to examine and compare heat-generating metal samples with full thermal controls. The invention measures the heat which the samples produce when electricity is driven through them [A183 in '457, A72 in Swartz (97), A178; A193-195, and A261-268]. The heat measured by '457 characterized what is called "activity" of the sample, which is defined as the ratio of the output heat power given off by the sample compared to the electrical input power delivered. Some of the heat is generated from the loading of hydrogen (a fuel) into palladium (a metal which absorbs hydrogen in the same way that a sponge fills with water).

'457 teaches a multiring calorimeter [Appendix D, A183, A72; also A178; and page OS17, lines 2-12].

'457 produces data characterizing the samples [Appendix E, A184, A76]. Outside the calorimeter [Appendix D], the heat given off by the samples is carefully monitored over time and compared with controls as taught in the original specification. Appendix E shows the output of the multiring calorimeter in '457.

'457 complied and conformed with the Patent Act by teaching the subject matter defined by each of the rejected claims, and then set forth the best mode contemplated.

### II

#### Fact 2 - The Claims Of '457 Have Operability

Independent Claim 13 (Appendix C, A188) claims the method of measuring the heat production of a sample "to determine the optimum electrical drive condition for said sample and thereby characterize said sample" for its optimum



input electrical power (in watts) drive condition. Specifically, claim 13 claims "holding said sample" [OS page 17, lines 2-12], "loading ... said material" [OS page 16, lines 11-14, and in Swartz (1992; A92), Swartz (1993), Swartz (1994; A97)]. Claim 13 then claims "thermally monitoring" [OS page 18, line 3 through page 19, line 3, and also page 10, lines 14-18] and "deriving the thermal response of said sample by computational means including accounting for the mass and temperature distribution of at least one barrier between said rings" [OS page 22, lines 3-11 and line 18 through page 23, line 14, also page 23, lines 21 through page 24, line 6, and lines 14-17, and page 25, lines 4-11]. Claim 13 then claims "increasing through a series of at least three incremental steps the electric power drive conditions of said electrical circuit" followed by means for "deriving for each said step data consisting of the thermal output relationship of said sample as function of said drive steps, thereby deriving an optimum drive condition of said sample" [OS page 15, lines 15-20, and page 23, lines 14-17].

### III

#### Fact 3 - Peer-Reviewed Papers Are Evidence

To support utility and operability of '457 and to demonstrate enablement, the inventor came forward with solid substantial, and timely, evidence of operativeness and utility proven by his peer-reviewed paper published by the American Nuclear Society [hereafter "Swartz(97)"; A71, Swartz, M., 1997, *Fusion Technology*, 31, 63-74; A71, also A83, A90]. The figures, graphs, and equations of Swartz(97) are identical to what was taught in the original specification and claims on the date of the original filing. A preprint of the cited paper was included with the original specification:

Swartz(97) proves that the present invention was operable and correctly taught in the original specification and claims on the filing date of the application, and this is validation. Applicant submitted this sterling relevant reference eleven (11) times to the Office. All eleven (11) copies [A10-A13, Table 1 (A18)] were received by the Office and Board. The paper was submitted, then resubmitted repeatedly, in the expectation that it would be recorded and considered. In fact, peer-reviewed Swartz(97) was specifically discussed with the

Examiner, and discussed in the Appeal Brief to the Board on page 40, in the Reply Brief including on page 6-7, 9-10, 19, 24-25, and in the Second Reply Brief including on pages 3-4.

Despite being submitted and received, Swartz(97) was ignored and systematically removed from the file [A197, A240, A323-325, A327-A330, A339]. To this day, Swartz(97) is not listed on the Office's first Docket (A3) nor on the Office's revised "second Docket" (A6), nor is it listed --or substantively addressed-- in the Decision which began this Appeal. \*\*\*\*-2

#### IV

#### Fact 4 - Declarations Are Evidence

Supporting utility and operability of '457 and demonstrating enablement, the inventor submitted several Declarations [A52, A55, A56, A58, A61, A28, A32, A36, A38, A44,

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\*\*\*\* - 2 Eleven copies of Swartz(97) [Fusion Technology, 31, 63-74, 1997; A71], demonstrating enablement existed at the time of the original filing, were submitted. On 3/12/97 a second copy was submitted and discussed it in the Response to the Examiner [pages 50 and 51]. Thereafter, Applicant was informed by Examiner Daniel Wasil that said published paper was "missing" and had been removed from the file folder. On 5/26/97, Applicant replaced the paper with a third copy, and discussed it in the Response to the Examiner [pages 2 and 3]. After it was ignored, on 11/8/97, Appellant sent additional copies to the Board (in triplicate) and discussed it in the Appeal Brief [pages 47, 57]. After it was ignored, on 6/25/98, Applicant sent the eighth, ninth, and tenth copies of the published paper to the Board, bound to each copy of the Reply Brief. Receipt of Swartz(97) is documented at least five (5) ways:

First, on the original specification, the preprint is listed:

Second, there are the numerous datestamps of the Patent Office [A10-A13, summarized in Table 1(A18)].

Third, Swartz(97) was listed on Forms 1440 (A14, A10-A13).

Fourth, Swartz(97) was discussed in the Response to the Examiner [pages 50 and 51] of the 3/12/97 Response, and pages 2 and 3 in the 5/26/97 Response, and in the Appeal Brief [pages 47 and 57].

Fifth, the Board admitted it received material "attached to Declaration of Dr. Mitchell Swartz Supporting Appeal Brief." (Paper No. 25)" [on page 21 of said Decision] and said Declaration was physically bound to Swartz(97).

A47,A49,A50)] which delivered substantive arguments to the Examiner's rejections. The Declarations were received [A10-A13, A18]. The Declarations contained factual statements with particularity directly addressing how the specification adequately described the subject matter recited in Claim 13, and demonstrating that it operated as stated and that a person of ordinary skill in the art would have understood the inventor to have been in possession of the claimed invention at the time of filing.

The Declarants substantially and fully addressed all matters and issues criticized by the Office and explicitly rebutted each and every issue with solid substantive evidence. The Declarations have proven that an adequately written description requirement is met because they demonstrate that the present invention works as taught in the original specification and claims, and thus contain averments regarding evidence establishing the utility, validation, and operability of the Applicant's claimed subject matter. Some of the Declarants rebutted what the Office falsely and egregiously claimed they said. Other Declarants state that the '457 has utility and that the Office's cited art has nothing to do with the Applicant's precise invention.

Discussion of the Declarations was made in the Appeal Brief and Reply Brief to the Board [Appeal Brief pages 40-43, Reply Brief pages 14, 15, 25-26, Second Reply page 3] and in other responses to the Examiner [A198, A248-A249,256, 285-286,298, A319-320, A329, A334-335, A342-343, A358-360, A380-385]. \*\*\*\* - 3

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\*\*\*\* - 3 The datestamp of the Office demonstrates said Declarations were received [A10-A13,A18]. Each Declaration was accompanied by statements supporting their introduction including full and explicit showing of good cause and sufficient reasons why they were not presented earlier. Said unrebutted Declarations include the Swartz Declaration (A28, 9/16/97, Fox declaration (A44, 5/16/95; Mallove Declaration (A38, 2/6/94; Verner Declaration (A36, 9/16/97); Rotegard Declaration (A47, 5/15/94); Bass Declaration (A32, 4/17/96) and testimony from Drs. Melvin Miles (A49); Brian Ahern (A50) and Ray Kurzweil (A51).

There has been a lack of due process. The Declarations remain ignored with respect to their factual engineering content regarding operability and utility because they accurately and absolutely refute the Decision's erroneous statements and position. Nor has the Decision produced any relevant substantive evidence to the contrary. Thus, it cannot be determined from the record which - if any - of these submitted averments by the Declarants were formally considered in the writing of the Decision.

V

**Fact 5 - The Office's Own Witnesses Provide Impeccable Evidence**

The Office's own witness, inaccurately cited by the Office, Dr. Michael Schaffer (A55, 8/7/01) said,

"I do not see how anyone could construe anything that I wrote at Scientific American's site to imply that there is "no utility" in cold fusion, much less in instruments that might be used in cold fusion and other scientific experiments. ... It appears that the Board of Patent Appeals considers me an expert on this subject. As an expert ... I would agree [Dr. Swartz's invention] ... does have utility".

The Office's own witness, Jed Rothwell (A61), inaccurately cited by the Office, said,

"None of my statements referred to the functionality, operability or performance of Dr. Swartz's multiring calorimeter. Nothing I have published or heard from scientists casts doubt on the claimed capabilities of Dr. Swartz's invention. ... I interviewed many people and some scientists, such as Dr. Michael McKubre, were enthusiastic about Dr. Swartz's device. Therefore I stated that it may well be a "superb research tool" in the article quoted."

~~The Office's own witness~~, Dr. Rehn, US Navy, inaccurately cited by the Office, said,

"Perhaps the clearest scientific fact, at this time, is the hardest for physicists to accept: nuclear reactions apparently do occur in deuterium-loaded Pd, Ti, and probably in other solids."

[Office of Naval Research, NAVSO P-3586, 18, 1/93].

~~The Office's own witness~~, Dr. Will, inaccurately cited by the Office, said,

"Significant positive results have been obtained (by) 100 groups from more than 12 countries"

[Final Report NCFI (1991)].

## VI

### Fact 6 - Petitioner's Declarants Provide Additional Evidence

Dr. Scott Chubb (A52, 8/13/2001) said,

"Dr. Swartz has invented an important, new device, whose purpose has value for measuring activity of a sample."

Dr. Eugene F. Mallove said (A58, 8/13/2001),

"The activity of a sample is an important issue and its measurement has great utility... The invention does not require the reproducibility of cold fusion phenomena... Rothwell actually praises ('457 stating) 'This could be a superb research tool...':"

Dr. Hal Fox (A56, 8/13/2001) said,

"... the method of measuring the activity of sample in the above-entitled action is clever, not obvious, and is an important invention with utility."

Dr. Michael McKubre [in the article cited by the Office, *Infinite Energy*, 4, 20, 34-35, (98)] said,

"For me ... perhaps the best report at this conference, was that of Mitch Swartz."

## VII

**Fact 7 - Petitioner's Submitted Exhibits Are Evidence**

Petitioner submitted Exhibits which substantively dispute the Office and discussed them with the Office and in the Appeal Brief [pages 45, 55-59], Reply Brief [pages 3-6, 12-13, 15-16, 18-20], and Second Reply Brief [pages 1-6]. The Exhibits included hundreds of peer-reviewed published papers [Table 2 (A19)] including Swartz(92), Swartz(94) and Swartz(99) [A92,A90,A83], Mallove pp246-248, Storms(90,93); Arata(90); Celani(90); Pons(90); Bockris(90); Szpak(91B); McKubre(91); Chene(90); Rout(91); Notoya(93, 94A,94B); Will(91,93,94); Bush(91); Miles(94C,91,93B,94C); Mizuno(94); and McKubre, SRI, "Summary During ICCF-7", *Infinite Energy*, 4, 20, pp.34-35, (1998)]. However, like Swartz(97) and the submitted un rebutted Declarations (A52,A55,A56,A58,A61, A28,A32,A36,A38,A44, A47,A49,A50), theses Exhibits = also supplied in the expectation that they would be read and considered = were (in violation of federal regulations and normal custom) not even recorded on the Docket sheet. When the Examiner informed the Petitioner that they were removed from the file folder, the Petitioner re-sent them, and then re-re-sent some of them [including Swartz(97)] eleven times.

The standards of review require that the Decision be based upon the invention which here measures heat release and the activity of a sample. Instead this Decision commits clear error when it purports that the invention did not have utility or validation based on its sole reference to other art. Here, the Office ignored the evidence, ignored the invention, and "hand waved" away from '457, instead pointing to 'cold fusion' as if it were a forbidden word. It is merely, one of several scientific and research environments in which the present invention finds utility.

Only by such improper action as systematically ignoring evidence can the Office and Board purport that this invention has no utility. As *amicus curiae* Fox stated,

"... (A)lthough an estimated 300 patent applications have been sent to the U.S. Office of Patents and Trademarks by inventors of new cold fusion devices and systems, no patents have issued citing the prior art. ... Inventors in other countries have been successful in obtaining patent protection by the governments. Over 100 low-energy nuclear reactions patents have issued in Japan and many more in various European countries ..."

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#### REASONS FOR GRANTING THE WRIT

I  
Briefly, the gravamen of this case is that the Office has (and thereafter the Board have) not properly followed customary standards of review and not complied with the authority of Article I, Section 8, Clause 8 and its enablement through Congressional directive and statute.

A Decision arising under Article I, Section 8, Clause 8 should be accurate, and it should be consistent with the record, and rendered with full and just consideration of submitted Exhibits and Declarations, but this one does not. This Decision does not read on the original specification and claims.

The writ should be granted because if the Decision must rely upon reference to art cut of a cloth other than the above-entitled specification and claims, then the Office's case must indeed be rather weak and that alone should dictate allowance of the present invention.

## II

The Amicus Curiae were silenced both by denial of a Hearing and thereafter by the court's failure to docket their four (4) laboriously-prepared and timely-submitted Amicus Curiae Briefs even though their input was acceptable to the Appellees (here Respondents). The writ should be granted because instead of fairness, the Decision substantively ignored the un rebutted Declarants, skilled-in-the-art, who have disputed the Office and attest to conformation with 35 U.S.C. §101. The Declarations demonstrate that the original specification and claims clearly define subject matter of considerable utility, and that therefore, the Applicant has fully conformed with, and satisfied, the requirements of §101 of the Patent Act and met at least one (1) stated objective [*Standard Oil Co. (Indiana) v. Montedison, S.P.A.*, 664 F.2d 356, 375, 212 USPQ 327, 344 (3rd Cir. 1981), cert. denied, 456 U.S. 915, 102 S.Ct. 1769, 72 L.Ed.2d 174 (1982); *E.I. du Pont de Nemours & Co. v. Berkley & Co.*, 620 F.2d 1247, 1258 n.10, 1260 n.17, 205 USPQ 1, 8n10, 10n.17 (8th Cir. 1980); *Krantz and Croix v. Olin*, 148 USPQ 659, 661-62 (CCPA 1966); *Chisum on Patents*, 4.04[4] [1983]; *Raytheon Company v. Roper Corporation, U.S.C.A.*, Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592].

## III

The writ should be granted because the Decision substantively ignored Swartz (97) which demonstrates enablement at the time of the initial filing despite that validation only comes through peer-review. Eleven (11) date stamps of the Patent Office are impeccable and undeniable evidence which demonstrates submission and receipt of Petitioner's peer-reviewed publication. It proves utility and enablement as of the filing date of this application, such that one of skill in the art could conduct this patent without undue experimentation (A136).

## IV

The writ should be granted because the Decision ignores the standards of review and ignored violations of the Office's own rules and the authority of the U.S. Constitution.



The normal standard of review requires the Office address the invention as it was actually taught in the original specification and claims, but here the Office did not.

The normal standard of review requires discussion of the submitted (but not docketed by the Office) Declarations because they prove utility and enablement.

The normal standard of review requires the Office substantively address Swartz(97) after it was discussed in the Appeal Brief on page 40 [also pages 20-24, and 29-39], and in the Reply Brief on page 6-7, 9-10, 19, 24-25.

The normal standard of review requires the Office to provide reason to doubt the objective truth of any of the Declarants' statements [*Enviroitech Corp. v. Al George, Inc.*, 730 F.2d 753, 762, 221 USPQ 473, 480 (Fed. Cir. 1984)]. It has not. It just ignores them and makes no mention of exactly why relevant evidence has not been substantively addressed.

The normal standard of review requires the Office not repeat disingenuous misstatements

The normal standard of review requires the Office to address the Office's misstatements which are directly contradicted by evidence already in the record.

The normal standard of review requires the Office admit that there is absolute impeachable and indelible evidence of the Office's own date-stamp (eleven times, and documented in the record) showing that the Office received the relevant Exhibits.

The writ should be granted because the Office inaccurately stated without evidence that the present invention has a putative lack of operability and utility under 35 U.S.C. §112, ¶1 and §101, even in the face of the USA at War and the un rebutted skilled-in-the-art Declarant and timely-submitted Exhibits. If the Office must rely upon reference to art cut of a cloth not even made from the original specifications and claims, and must systematically ignore un rebutted duly-submitted Declarations and Exhibits, then the Office's position is weak = which should dictate allowance of the present invention.

## V

The writ should be granted because the original specification and claims complied and conformed with the Patent Act and taught the subject matter defined by each of the rejected claims, set forth the best mode contemplated, and distinctly point out and claim the subject matter which constitutes the invention. This is forever corroborated by un rebutted Declarations, ignored *amicus curiae* Briefs, and published peer-reviewed paper timely submitted with evidence including the impeccable date stamp of the Office.

The writ should be granted because enablement and validation of the present invention are an issue of fact, supported by un rebutted Declarants, un rebutted Exhibits, and Swartz(97). Said enablement and operability of the invention are grounds supporting patentability.

## QUESTIONS PRESENTED

**Did the Decision Misread the Claims of the Present Application Under 35 U.S.C. §101 and 35 U.S.C. §112?**

## I

Deviating from the normal standards of review, the Decision has misread the claims of '457 far from that fact that it is a novel calorimeter (i.e., a heat-measuring instrument) [A183 in '457, A72 in Swartz(97), A178; also A193-195, and A261-268] and a "method to ... characterize (a) sample". Petitioner discussed this invention, pursuant to 35 U.S.C. §112, in the Appeal Brief [APB 30-60] and Reply Brief [pages 2-10, 12-13]. And yet, even though the present invention's subject matter regarding measurement of heat activity, and of characterization of samples was discussed. NONE of the words which encompass the invention and the claims are mentioned in the Decision. Instead, the Decision of the Board inaccurately substitutes the words "cold fusion" repeatedly for the words "heat production", and for the word "activity", and for the words "electric power drive", and for "thermally

monitoring", "thermal output", "optimum drive condition", and even for "multiring calorimeter". Documenting this forever, the Decision refers to "cold fusion" eighty-six (86) times, but the above words not at all. Further rubber-stamping the Office's error, and denying justice and the American way, the Decision of the Appellate Court uses the words "cold fusion" 14 times, but "calorimeter" not even once.

## II

An invention (in its structure, operation and composition) is defined by the claims and the original specification. However, this Decision has failed to correctly describe the invention and then is about art cut of cloth made of other than the present invention and claims. This Decision does not accurately discuss the present invention. Only two sentences in the entire Decision accurately discuss the present invention, and they are direct quotes from the original specification.

The misreading of claims and subject matter is the Office's segue to cite totally irrelevant art ("FP" for Drs. Fleischmann and Pons) which then constitutes the entire Decision which then ignores the present invention as it lectures on the work, activities, and mistakes, of others, specifically Dr. Fleischmann and Pons (FP) from 1989 = and not the original specification and claims of the above-entitled invention [Appendices C,D,E]. Thus, the Decision leads away from the present invention. Corroborating this, the Decision did not rebut the Declarations, or the Exhibits, or Swartz(97), but only refers to other irrelevant immaterial art. As a result, none of the Decision of Board (28 pages) pertains to the present invention but rather to the Office's now fourteen (14) year long attack on cold fusion and those poor American citizens who have dared to research and develop it as an alternative energy source for America. It is only by the Office calling the present invention "cold fusion" instead of a novel multiring calorimeter and method to measure heat producing activity, that the Office can get away with its patent nonsense such as claiming that heat measurement is an "unattainable result" when Appendix E herein from the record below heralds otherwise.

### III

Such malicious "boilerplate" attack by the Patent Office on the words "cold fusion" is well-known and is contrary to the commonsense interests of United States security. As the *amicus curiae* Eugene F. Mallove, Sc.D has stated,

"The most notable characteristic of the attack against the Swartz patent application at hand is its stale fixation with misrepresented events of 1989, its citation of erroneous reports, and its continued argument from supposed authority, rather than from evolved science and meticulous experiment."

The Decisions' continual referral to "cold fusion" rather than '457 is systematic prejudice because the present invention is not "cold fusion", but rather, '457 is a means to evaluate, to measure, a sample's heat-producing activity. It could detect cold fusion, and it could characterize samples used for cold fusion. It also makes better home water heaters, and safer more efficient energy systems.

It is more than unfortunate that with U.S. at War, the Office continues to be fixated on using disingenuity, systematic false statements, and reliance upon fraud. \*\*\*-4

### LAW

**Point 1 - The Office is Inaccurate and Disingenuous about the Subject Matter**

Because of its errors, and its basis upon disingenuous notions, the Decision is necessarily inconsistent with several standards of review and case law. The Office has acted

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\*\*\* - 4 The present invention, '457, has been used to measure data for DARPA and has already been described in publications by the *American Nuclear Society*. Their work is impeccable and does not explain why with the USA at War, the Office continues to be disingenuous and discriminate and violate the US Constitution and Congressional directive, just so that a few under color of law can further deny the USA access to an available alternative energy source. It is reprehensible that in this case, the Office ignores input to from scientists, and from those who serve the military, NASA and DARPA. It is reprehensible that in this case, the Office coverup continues in the federal system without accountability.

odiously to avoid the controlling authority of the Constitution:

The Decision rejects the reasoning of *In re Morris* [127 F.3d 1048, 1053-56, 44 USPQ2d 1023, 1027-30 (Fed. Cir. 1997)] demanding that the interpretation of operability and utility is predicated upon that which one who is skilled-in-the-art would reach. The Office should have given the claims their broadest reasonable interpretation consistent with that which those skilled-in-the-art = i.e.: Declarants and silenced *amicus curiae* = would reach.

The Decision rejects the reasoning of *In re Prater* [415 F.2d 1393, 162 USPQ 541 (CCPA 1969)] because the pending claims must be given the broadest reasonable interpretation consistent with the specification:

The Decision rejects the reasoning of *In re Zietz* [893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989)] because the specification clearly and explicitly stated the meaning of the terms in the claims which involve an invention used to measure heat-producing ability, or activity, of a sample:

The Decision rejects the reasoning of *In re Prater* [415 F.2d 1393, 162 USPQ 541 (CCPA 1969)] because the Decision relies solely on art cut of a cloth other than the present specification and claims. The Decision rejects the reasoning of *In re Ferens* [417 F.2d 1072, 1074, 163 USPQ 609, 611 (CCPA 1969)] and *In re Oberwener* [115 F.2d 826, 829, 47 USPQ 455, 458 (CCPA 1940)] because the Office falsely purports that the invention is "cold fusion" rather than a method to measure the heat generating activity of a sample.

The Decision rejects the reasoning of *Newman v. Quigg* [877 F.2d 1575, 1581, 11 USPQ2d 1340, 1345 (Fed. Cir. 1989)] because the Office derides the present invention with reference to cold fusion but, in fact, measurement of heat generation of a sample has absolutely nothing to do with perpetual motion but has been shown to work [Appendix E]:

The Decision rejects the reasoning of *In re Swartz* because there are other uses for the present invention than just "cold fusion". '457 is applicable to calorimetric science, water heating, laboratory testing, electronic engineering, and other

fields. In this case, the inventor mentioned many uses including the measurement of activity of a sample (Original Specification, page 7) and the sorting of samples for the amount of heat which they give off or absorb. Thus, the present invention is useful for determining the efficiency of present water heaters as discussed and demonstrated in the original specification. This diversity of use is consistent with the directive of the appellate court [00-1107 and 00-1108] where, not coincidentally but maliciously, two other inventions were also labeled "cold fusion" by the Office. \*\*\*-5

**Whether The Office Failed The Standards Of Review  
By Ignoring Testimony Of Declarants  
Skilled-In-The-Art Under 35 U.S.C. §112 And 35 U.S.C.  
§101.**

**I**

Despite the normal standards of review, the Office [and Decision] did err in failing to give substantial weight to un rebutted Declarants of probative value who are skilled-in-the-art (\*\*\*\*-6) and whose testimony did rebut and refute the Office's [and Decision's] unsupported disingenuous statements and erroneous conclusion. The Declarants, corroborated by the *amici curiae*, prove that Petitioner taught

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\*\*\*\* - 5 It is against the US Constitution that the Patent Office routinely attacks Petitioner's (and others') research using misstatements and deceptive obfuscatory boilerplate argument, as in the above-entitled record below. As palpable examples to this court, attention is direct to the fact that in this court [00-1101, from In re Swartz 00-1107] the Office falsely called that invention, for measuring the loading of the hydrogen into a metal sample using a vibration of that sample [A345-347, A357], "cold fusion", too, so as to demean it. Similarly, the Office, in this Court [00-1101, In re Swartz 00-1108], falsely called that invention using a two-step system to drive hydrogen diffusion in metals [A372-373, A387-388], "cold fusion", too, to demean it.

\*\*\*\* - 6 The Declarants, authorities in their fields, include some of the Office's witnesses who now directly refute and contradict the Office [Dr. Rehn, Dr Will, Dr. Schaffer (A55), and Rothwell (A61)].

material that was understood by persons with normal engineering skill. They prove that as of the filing date, scientists skilled-in-the-art considered loading, and heat measurement to be real and to have been taught correctly in the original specification and claims. The un rebutted Declarations were received by the Office (A10-A13,A18), cited in the inventor's pleadings and then in the Appeal Brief [pp.33-34] and Reply Brief [pages 3-6, 12-13,15-16,18-20].

## II

The submitted un rebutted Declarations were ignored regarding their probative content. The Declarants have been relegated to "opinion"-status without an adequate explanation of how the declarations failed to overcome the *prima facie* case initially established by the Board but copiously overcome by Petitioner.

None of their most important relevant paragraphs are referred to in the Decision. Most importantly, the Decision erred in omitting exactly why the un rebutted Declarants have not been addressed, which - if any - of these submitted un rebutted documents regarding operability and utility have been formally considered by the Board and, if so, how they reached their conclusion given the evidence supporting the Petitioner.

## LAW

### **Point 2 - Witnesses, Even Those Cited by the Office, Dispute the Office**

Because the Office has ignored Declarants and submitted Exhibits, the Decision is necessarily inconsistent with several standards of review and case law:

The Office has rejected the directive of 1:131 (a)(1) which states that "When ... a patent ... is rejected ... on reference ... to a printed publication, the inventor of the subject matter of the rejected claim ... may submit an appropriate oath or declaration to overcome the patent or publication."

Therefore, the unrebutted Declarations (and other evidence) are allowable.

The Decision rejects the reasoning of *In re Morris* [127 F.3d 1048, 1053-56, 44 USPQ2d 1023, 1027-30 (Fed. Cir. 1997)] because the interpretation of operability, utility, and enablement is predicated must be consistent with that which one who is skilled-in-the-art would reach. [*In re Morris* ("[T]he PTO applies to the verbiage of the proposed claims the broadest USPQ2d 1566, 1567 (Fed. Cir. 1990) ("It is axiomatic that, in proceedings before the PTO, claims in an application are to be given their broadest reasonable interpretation consistent with the specification, ... and that claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art.") (emphasis added); see also M.P.E.P. §2111.01.

The Decision rejects the reasoning of *In re Alton* [94-1495, S.N. 06/483,451] because the Board has mistaken a question of fact for a question of law. The Board has ignored the Declarations purporting that they are "opinion". This is wrong and improper. Dr. Mallove's, or the other Declarants', use of the words "it is my opinion" to preface what someone of ordinary skill-in-the-art would have known does not transform the factual statements contained in the declaration into opinion testimony. The Board erred by dismissing declarations improperly to "opinion"-status, without an adequate explanation of how the declarations failed to overcome the *prima facie* case initially established by the Board and refuted by the evidence including the Declarations and Swartz(97).

How many Declarants does it take to overcome the Office's unsubstantiated rejection? Applicant discussed the Declarations in his Responses to the Examiner and to the Board [A198, A248-A249,256, 285-286,298, A319-320, A329, A334-335, A342-343, A358-360, A380-385]. Consequently, the Board's dismissal of any of the unrebutted Declarations (A52,A55, A56,A58,A61, A28,A32, A36,A38, A44,A47, A49,A50) on the grounds that they are "opinion" is an error of law. The Declarations contain factual evidence and the Board is obligated by law to assume that said Declarants' unrebutted assertions are true [*Lewis v. Bours*].



The Decision rejects the reasoning of *In re Brana*, 51 F.3d 1560, 1564 n.12, 34 USPQ2d 1436, 1439 n.12 (Fed. Cir. 1995)] because the Office has never given reason for doubting the objective truth of the Declarants' statements. This is relevant because the Declarants support the present claimed invention [*Enviroitech Corp. v. Al George, Inc.*, 730 F.2d 753, 762, 221 USPQ 473, 480 (Fed. Cir. 1984)].

The Decision rejects the reasoning of *In re Zurko* [142 F.3d 1447, 1449, 46 USPQ2d 1691, 1693 (Fed. Cir.), cert. granted, 119 S. Ct. 401 (1998)] because utility is a fact question [*Raytheon Company v. Roper Corporation*, U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592], and one which the Court must review for clear error [*Cross v. Iizuka*, 753 F.2d 1040, 1044 n.7, 224 USPQ 739, 742 n.7 (Fed. Cir. 1985)].

The Decision rejects the reasoning of *Ex parte Gray* [10 USPQ2d 1922, 1928 (Bd. Pat. App. & Inter. 1989)] because there is solid evidence of operability and utility, beyond the detailed specification, in the form of corroboratory unrebutted expert testimony of Declarants and *amici curiae* which fully addressed all matters criticized by the Office regarding operability, substantially and extensively [*In re Gazade*; *In re Chilowsky*; *In Re Jolles*]. Nothing has been presented by the Office which differs or rebuts the Declarations.

The Decision rejects the reasoning of *In re Getiker*, 977 F.2d at 1445, 24 USPQ2d at 1444] because the Office "bears the initial burden ... of presenting a *prima facie* case of unpatentability". Thereafter, the Petitioner undertook the full burden coming forward (A10-A13, A18): with his evidence and Declarations (A52, A55, A56, A58, A61, A28, A32, A36, A38, A44, A47, A49, A50) as required: Swartz(97) and the Declarations have not been rebutted or even substantively addressed by the Office despite that the Office's burden is only discharged by the Office by "presenting evidence or reasons why persons skilled-in-the-art would not recognize in the disclosure a description of the invention defined by the claims" [*Vertheim*, 541 F.2d at 263, 191 USPQ at 97]. That was NOT done in this case, either by the Office or the Board. Thus, the Board made an improper rejection on the ground that the application purportedly failed to describe an invention of utility and operability relating to the independent

claims, even as it ignored Declarations containing relevant fact by probative witnesses (A52,A55,A56,A58,A61, A28,A32,A36, A38,A44,A47, A49,A50). The Decision should have responded to the un rebutted Declaration, but did not.

The Decision rejects the reasoning of *Ex parte Porter* because the Decision is inconsistent with said un rebutted Declarations, written by those skilled-in-the-art and timely submitted by Petitioner in response to the Office's inaccurate and disingenuous comments.

The Decision rejects the reasoning of the Appeals Court [*Marino v. Hyatt Corporation*, 793 F.2d 427, 430 (1st Cir. 1986)]; *Morrill v. Tong*, 390 Mass. 1207 129 (1983); *Chelebda v. H.E. Fortuna & Brothers Inc* 609 F.2d 1022 (1st Cir. 1979)] because the Office failed to assume that Declarants' un rebutted assertions =made before the Appeal and in response to false statements made by the Office= are true [*Lewis v. Bours*, 119 Wn.2d 667, 670, 1992].

The Decision rejects the reasoning of *In re Irons* [52 CCPA 938, 340 F.2d 974, 144 USPQ 351 (1965)] because the Office's Witnesses, and other Declarants, and the *amicus curiae*, dispute the Office in timely-submitted Declarations.

The Decision rejects the reasoning of *In re Marzocchi*, 439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971)] because the Board cannot make this type of rejection, unless it has reason to doubt the objective truth of the statements contained in the written description. [*In re Brana*, 51 F.3d at 1566, 34 USPQ2d at 1441 ("Only after the PTO provides evidence showing that one of ordinary skill in the art would reasonably doubt the asserted utility does the burden shift to the applicant to provide rebuttal evidence sufficient to convince such a person of the invention's asserted utility"); *In re Marzocchi*] ("[A] specification disclosure which contains a teaching of the manner and process of making and using the invention in terms which correspond in scope to those used in describing and defining the subject matter sought to be patented must be taken as in compliance with the enabling requirement of the first paragraph of §112 unless there is reason to doubt the objective truth of the statements

contained therein which must be relied on for enabling support<sup>(4)</sup>).

The Decision rejects the reasoning of *In re Ziegler* [992 F.2d 1197, 1200, 26 USPQ2d 1600, 1603 (Fed. Cir. 1993)] because Declarations factually confirm proof of utility. The Office has ignored Rotegard(A47), Swartz(A28), Bass(A32), Fox(A44 and A56), Mallove(A38 and A58), Chubb (A52), Verner (A36), Kurzweil(A51), Rothwell (A61), Ahern(A50), Schaffer (A55), and Miles(A49) which individually prove that the present claimed invention which measures heat-generating activity meets at least one stated objective and therefore defines subject matter of considerable utility under §101 of the Patent Act.

**Whether The Office Failed The Standards Of Review  
By Ignoring Evidence Including *Fusion Technology* '97  
Under 35 U.S.C. §112 And 35 U.S.C. §101.**

**I**

Petitioner (then Applicant) supplied Exhibits to the Office as evidence consisting of over 300 papers (~140 pounds; Table 2; A19), including over 30 of his own peer-reviewed papers (several published by the American Nuclear Society in *Fusion Technology*, A92, A90, A83) and including Swartz: M., 1997, *Fusion Technology*, 31, 63-74, which proved that Petitioner was correct, and the invention was correctly taught in the original specification and claims on the filing date of the application. Also, several Exhibits included reports by US laboratories, US NAVY, EPRI, DARPA, and NASA, submitted in response to the Office's unsubstantiated notions. Many Exhibits were published before the present original specification and claims and demonstrate that the Office's notions were wrong, and are salient proof of operability and utility.

Petitioner submitted this evidence because "(p)atentability is determined on the totality of the record, by a preponderance of the evidence with due consideration to persuasiveness of argument." [Id. at 1445, 24 USPQ2d at 1444]. Petitioner showed good cause and clearly specified the reasons why the Exhibits were not submitted before, namely they were not necessary prior to the misstatements by the Office. Said Exhibits exceed by any test the amount of evidence required for proof of utility. The Office should have responded to them, and if not, admit that the Applicant has submitted and demonstrated substantial solid evidence (A19) supporting the present application at the time it was filed. The Office was Ordered to substantively respond (A145) but has not.

### LAW

The Decision rejects the reasoning of *In re Hogan* [559 F.2d 595, 605, 194 USPQ 527, 537 (CCPA 1977)] because enablement must be judged on the original specification and claims. Swartz, M., 1997, *Fusion Technology*, 31, 63-74 proved that Petitioner was correct, and the invention was correctly taught in the original specification and claims on the filing date of the application.

### Point 3 - Peer-Reviewed Publications Were Timely Submitted Proving Patentability

The Decision rejects the reasoning of *In re Wands* [858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988)] because this original specification provides an adequately written description of the subject matter, including how to operate the invention, and claimed the invention so that an artisan, or those skilled-in-the-art, could practice it without undue experimentation [*In re Wands*, citing with approval *Ex parte Forman*, 230 USPQ 546, 547 (Bd. Pat. App. & Int. 1986)]. Sufficient would be either the Declarations or the published peer-reviewed paper which demonstrate that the specification provides an adequately written description of the subject matter, including how to operate the invention, and claimed the invention so that an artisan, or those skilled-in-the-art, could practice it without undue experimentation.

Together, the Declarations and published peer-reviewed paper corroborate enablement of the present invention both *de facto* and *de jure*.

The Decision rejects the reasoning of *In re Vaeck* [947 F.2d 488, 495-96, 10 USPQ2d 1438, 1444 (Fed. Cir. 1991)] because an enablement rejection under section 112, ¶1 is only appropriate where the written description fails to teach those in the art to make and use the invention as broadly as it is claimed without undue experimentation. The Decision has not met the burden of proof as to why one of ordinary skill-in-the-art would not consider the description sufficient given the Exhibits. Here there was the published identical peer reviewed publication conveniently ignored despite it being submitted eleven times.

The Decision rejects the reasoning of *In re Oetiker*, 977 F.2d at 1445, 24 USPQ2d at 1444] because it ignores the relevant peer-reviewed Exhibits including Swartz(97) [A71] demonstrating operability and utility [therefore enablement]: *In re Oetiker* requires the Board (and Office) to substantively and fully respond to the probative witnesses (A52,A55,A56,A58,A61, A28,A32,A36, A38,A44,A47, A49,A50); because Applicant undertook the full burden coming forward (A10-A13,A18). The Decision should have responded to the un rebutted Declaration, but did not.

The Decision rejects the reasoning of *In re Brana* and *In re Elitroth*, 419 F.2d 918, 164 USPQ 221 (CCPA 1970)] because it relies solely on other art and claims than those involving the present application. The PTO may establish a reason to doubt an invention's asserted utility only when the written description "suggest[s] an inherently unbelievable undertaking or involve[s] implausible scientific principles".

The Decision rejects the reasoning of *In re Gazave*, 54 CCPA 1524, 379 F.2d 973, 154 USPQ 92 (1967)], *In re Chilowsky* [43 CCPA 775, 229 F.2d 457, 108 USPQ 321 (1956)], and *In Re Jolles* because there was significant evidence submitted as copious un rebutted Exhibits by Applicant regarding utility.

This heat-activity-measuring method to select active materials should be patentable based upon opinions of this Court.

**"Transformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines."**

**[Gottschalk v. Benson, 409 U.S. 63 (1972);  
409 U.S. 63, No. 71-485]**

**"Industrial processes such as this ['a physical and chemical process (which involves) the transformation of an article ... into a different state or thing'] are the types which have historically been eligible to receive the protection of our patent laws. [450 U.S. 175, 185]"**

**[Diamond v. Diehr, 450 U.S. 175 (1981)]**

### **Whether The Office Failed The Standards Of Review And 18 U.S.C. §1001 By Making False Statements Or Writings Of Temperature And Voltage.**

The Decision has material false statements undeniably contradicted by the original specification and by the record (Table 3; A147). As just one example, the Decision falsely states *"there is no disclosure . . . of a specific operative embodiment . . . including ... temperature"* [pages 25,26]. However, this is untruthful because temperature is discussed in the original specification on page 18, line 3 through page 19, line 3. Temperature calculations are discussed on page 22, line 18 through page 23, lines 14, and page 15, lines 15-20.

As another example, the Decision falsely states *"there is no disclosure . . . of a specific operative embodiment . . . including ... voltage"* [pages 25,26]. However, this is contradicted because the computed sampling of voltage is discussed in the original specification on page 15, lines 15-20. Voltage is discussed on page 26, line 19 through page 27, line 4. Figures 5 shows the voltage. Figures 4, 5, 6 in the OS show the voltage indirectly through the power and power gain (which are the more important engineering parameters).

## LAW

The Decision rejects the reasoning of *In re Fouche* [439 F.2d 1237, 1243, 169 USPQ 429, 434, (CCPA 1971)] because an invention in structure, operation and composition) is defined by the claims and the original specification. Here, the Decision does not refer to the present invention but instead is composed of disingenuous statements.

### **Point 4 : The Office's Disingenuous Statements Are Inconsistent With Accuracy, Precision And Accountability**

The Decision ignores 18 U.S.C. §1001 because the submitted Declarations, and Swartz(97), and the copious Exhibits were received (A10-A13,A18), and therefore in their light the Decision is composed of false statements known to be false *a priori* [*Nichol's v. Sahagian*, 163 A.2d 211 (Me. 1954)]. This is a breach of duty [*Rannard v. Lockheed Aircraft Corp.*, 26 C.L. 2d 149 (1945)].

The Decision ignores 18 U.S.C. §1001 by reference to inaccurate statements and even falsified PFC-PhaseII data previously brought to the attention of the Office in detail [A14-18] and to the attention of the federal court [00-1107, also 00-1108 in the Reply Brief on pages 1-11]. The Decision thus incorporates reference to altered data in a proceeding wherein the law authorizes the administration of an oath [*People v. Pierce*, 66 Cal. 2d 53 (1967)], and as such the Decision rejects the reasoning of many courts [*U.S. v. Price*, 86 S. Ct. 1152, 1157, footnote 7; *Sawtelle v. Farrell*, 70 F.3d 1381, 1387 (1st Cir. 1995); *Leaseco Data Processing Equip. Corp. v. Maxwell*, 468 F.2d 1326 (2d Cir. 1972); *Pizarro v. Hotels Concorde Int'l, C.A.*, 987 F.2d 1256 (1st Cir. 1990); *Peckham v. Continental Casualty Ins. Co.*, 895 F.2d 830, 836 (1st Cir. 1990); *Donatelli v. National Hockey League*, 893 F.2 459, 465 (1st Cir. 1990)].

## **Whether The Office Has Complied With The United States Constitution And The Congressional Will.**

### **I**

The Decision rejects the controlling authority of the United States Constitution for patentability under Art. I, §8, cl. 8. This is especially serious because inventions involving energy efficiency and energy monitoring have great utility during War. To bypass the controlling authority, the Office has relied upon art other than the actual original specifications and claims, and has used disingenuous and "tongue-in-cheek" statements, and has ignored the Declarations. These actions herald bias rather than compliance with the normal standards of review for patentability statutes arising under Art. I, §8, cl. 8.

### **II**

The Decision rejects the controlling authority of Article I, Section 2. Petitioner is entitled to the privileges and immunities of citizens in the other states, consistent with the reasoning of the Supreme Court in *United States v. Nixon* [418 U.S. 683 (1974)] that all are "equal under the law". Here, the Decision ignores that the Office, has allowed selected other patents in the very same field, to wit Czirr (5,231,290); Westphal (5,215,631); Ahern (5,411,654); Patterson (5,036,031); (5,318,675); (5,372,688); (5,036,031); Aspden, UK-GB 2,231,195B. Thus the Office has denied due process, has not following harmonization, and has ignored Equal protection under the law. In fact, by not following the standards of review, a dual-tiered system is presently operated by the Office, rather than a single uniform just approach.

### **III**

#### **Point 5 - The Constitution And Congress Encourage Progress Not Cover-Up**

The Decision rejects the controlling authority of the United States Constitution [Article VI] because states, governments, and officials cannot take actions that interfere with the Constitution or laws passed by Congress.



Here, the controlling authority of Congress has spoken to "encourage progress" [*Diamond v. Chakrabarty*] and to encourage ingenuity [447 U.S. 303, 309] and has performed its constitutional role in defining patentable statutory subject matter to include

"anything under the sun that is made by man"  
[S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)].

In this case, the Office ignores submitted affidavits of probative value from Americans. In this case, the Office ignores peer-reviewed publications from the impeccable *American Nuclear Society*.

The Office astonishingly and odiously claims that energy measurement and efficiency has no utility during a time of War. How can this be? First, the Office through its agency of control, the Commerce Department, has sold the present patent application to Communist China on CD-ROM for political donations but steadfastly refuses to allow this American technology to develop after patent issue in the USA as the founding fathers foresaw. Second, during this obstruction of the above-entitled application, the US Patent Office under Q. Todd Dickinson has issued patents using astrology to predict lottery numbers, claiming that they have unique "operability" and "utility". This, frankly insane, behavior by the Office is egregious, morally wrong, scientifically inaccurate, and hurtful to the welfare and security of the United States of America.

#### IV

The Decision rejects the controlling authority of The 14th Amendment. The Decision rejects the standards of patentability, and is arbitrary and capricious and promotes discrimination and civil rights violation. Petitioner is entitled to an impartial tribunal [28 U.S. Code Section 144, *Mayberry v. Penna.*, 91 S.8.; *Bloom v. Illinois*, 88 Ct. 499 S.Ct. 1477; *Duncan v. Louisiana*, 88 S.Ct.1444] and equal protection of the laws. In the light of the unrebutted Declarations, "lost" submitted papers, and the corrupted docket in this case under color of

law [*U. S. v. Price*, 86 S. Ct. 1152, 1157], there have been systematic violations of the 14th and 5th Amendments' "equal protection" clauses [*Frontiero v. Richardson*, 93 S.Ct. 1736, 411 U.S. 677; *Weiss v. Weiss*, 436 N.Y.S. 2d. 862, 52 N.Y. 2d. 170 (1981)] with serious implications [*Gass v. Lopez*, 95 S. Ct 729; *Wood v. Strickland*, 95 S Ct 952; *U.S. v. Price*, 86 S Ct 1152, 1157, Footnote 7; *Griffin v. Breckenridge*, 91 S Ct 179D; *Gamez v. Toledo*, 42 U.S.C. §1983, and *Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics*].

This protection of due process has been denied to Petitioner. The Decision ignores the American Bar Association's comments on new description guidelines of the PTO which says that the PTO should be "technologically neutral.

<http://www.uspto.gov/web/offices/com/sol/comments/utilitywd/aba.pdf>

This denial and other matters discussed, including the missing pleadings, and simply do not comport with any notion of fair play of justice.

This behavior does not comport with any notion of fair play or justice. Discrimination has previously been important to this court. \*\*\*\*.7

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\*\*\*\* = 7 Civil Rights Acts of 1964 and 1991; the Americans with Disabilities Act of 1990; the Voting Rights Act of 1965; the Equal Credit Opportunity Act; the Equal Educational Opportunities Act of 1974; the Individuals With Disabilities Act; the Equal Pay Act of 1963; the Age Discrimination in Employment Act of 1967; the Age Discrimination Act of 1975; the Rehabilitation Act of 1973; Title IX of the Education Amendments of 1972; the Community Reinvestment Act of 1977; the Immigration Reform and Control Act of 1986; the Fair Housing Act of 1968; the Family and Medical Leave Act of 1993; and Executive Order 11246 (1965) as amended by Executive Order 11375 (1967).

## CONCLUSION

This case may initially appear to be *de minimis* because it involves measurement of small amounts of heat energy; but it is of great and compelling importance when measured by either the particular constitutional mandate of Art. I, §8, cl. 8, or in the light of the number of people dependent upon energy monitoring, efficiency and utilization, and upon alternative energy sources in a time of War.

**"Today's patent statute is remarkably similar to the law as known to Jefferson in 1793. Protection is offered to "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." 35 U.S.C. 101**

**[*Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*]**

The original above-entitled specification, '457, [A148, Claims 13-14, 21-22, and 24-39 (all pending claims)] taught a written description of how the heat-producing activity of a sample can be measured by a multiring calorimeter. Petitioner set forth the best mode contemplated, distinctly pointed out and claimed the subject matter which constitutes the invention; wrote an adequate and enabling disclosure, and thus complied and conformed with 35 U.S.C. §112, first paragraph, of the Patent Act by teaching the subject matter, and distinctly pointing out and claiming the subject matter which constitutes the invention, including the best mode contemplated.

The Office's claim that there is a "lack of operability" under 35 U.S.C. §112, ¶1 and "lack of utility" under 35 U.S.C. §101 has only been made by the Office systematically ignoring the original specification and claims, by ignoring the timely-submitted unrebutted Declarations (A52, A55, A56, A58, A61, A28, A32, A36, A38, A44, A47, A49, A50), by ignoring scores of Exhibits (~140 pounds, A19, A71), and by ignoring the Office's own rules and even previous Orders by the Board demanding a response to the Declarants regarding material matters of fact (operability and utility):

Despite the Office's notions, validation comes through peer-review [Swartz: M., 1997, *Fusion Technology*, 31, 63-74] and by testimony of those skilled-in-the-art (Rotegard(A47), Swartz(A28), Bass(A32), Fox(A44 and A56), Mallove(A38 and A58), Chubb (A52), Verner (A36), Kurzweil(A51), Rothwell (A61), Ahern(A50), Schaffer (A55), and Miles(A49) [*In re Wands*]). In this case, affiants have rendered testimony that there is enablement (a question of law; *In re Fouché*). The peer-reviewed publication [Swartz(97)] and Declarants (A52, A55, A56, A58, A61, A28, A32, A36, A38, A44, A47, A49, A50) confirm that the present method to measure heat producing activity of a sample, '457, has both operability and utility. Thus, the publication and Declarants herald operability and utility, and thus enablement both *de facto* and *de jure*.

The Office's notions reveal that the Decision reads not on the original specification and claims, but instead on art cut of a cloth other than this invention and these claims. This nonsubstantive response containing numerous false statements all contradicted by record [Table 3; A147] proves that the Office's notions are quite weak, heralding again the need for allowance of the present invention.

This Petition has authority because Congress has "encourage(d) progress" [*Diamond v. Chakrabarty*, 447 U.S. 303 (1980), 447 U.S. 303, No. 79-136, quoting *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 530-531 (1972); *Graham v. John Deere Co.*, 383 U.S. 1, 7-10 (1966)] and ingenuity [447 U.S. 303, 309], and has precisely defined patentable statutory subject matter to include

**"anything under the sun that is made by man."**

[S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)].

There is no doubt that Congressional intention and meaning, and that of the statute, was to include an invention involving energy efficiency and monitoring. Petitioner, the *amicus curiae* and Declarants, and many of the affiants in this case associated with the Navy, Air Force, and other agencies, would probably submit that the Office is wrong for inventions related to energy.

Attention of this court is directed to the fact that when a previous similar case of the Petitioner v. the Patent Office on this matter was submitted to this court [00-1191], the Patent Office and Mr. Dickinson did not even bother to submit a Brief. This is more than an appearance of impropriety. In addition, if this court had taken that Petition, then there probably would have been enforcement of the US Constitution [Article I, Section 8, Clause 8], and the intent of the Constitutional framers and Congressional directive [Diamond v. Chakrabarty]. As a result, when the 911 Atrocity arrived on the US soil, the United States would have had a developing =now still urgently needed= alternate source of energy.

Looking ahead, this court has final supervisory jurisdiction over the subject matter. This court should consider this immediately and correct this situation by simply directing the Respondents to abide by their own Rules and standards of review.

The Petitioner regrets any inadequacies in this Petition. This Court has ruled that any *pro se* litigant is entitled to less stringent standards [U.S. Rep volume 404, pages 520-521 (1972)].

Wherefore, Petitioner respectfully requests that for the above reasons that this Petition for Writ of Certiorari be granted.

Very respectfully submitted,

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Mitchell Swartz, ScD, MD  
*pro se*, Petitioner  
P.O. Box 81135  
Wellesley Hills, MA 02481-0661

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IN THE  
**Supreme Court of the United States**

Mitchell R. Swartz, *Petitioner*

v.

Q. Todd Dickinson, Director of the USPTO,  
Commissioner of Patents and Trademarks, *Respondent*

On Petition For A Writ Of Certiorari  
To United States Court Of Appeals  
For The Federal Circuit  
02 - 1240 (Serial No. 08-406,457)

**APPENDICES**

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**APPENDIX A :  
DECISION 02-1240 (Serial No. 08/406,457)**

Issuing Court: US Court of Appeals for the Federal Circuit  
Number of Case: 02-1240 (Serial No. 08/406,457)  
Date of Denial: 11/08/02

Mitchell R. Swartz appeals from the decision of the United States Patent and Trademark Office ("PTO") Board of Patent Appeals and interferences ("Board"), Appeal No. 1998-2593, affirming the examiner's final rejection of claims 13, 14, 21, 22, and 24-39 of application Serial No. 08/406,457 for lack of operability or utility under 35 U.S.C. §101 and for lack of enablement under 35 U.S.C. § 112, ¶1. We affirm the Board's decision.<sup>1</sup>

"The question of whether a specification provides an enabling disclosure under §112, ¶1, and whether an application satisfies the utility requirement of §101 are closely related" in re Swartz, 232 F.3d 862, 863, 56 USPQ2d 1703, 1703 (Fed. Cir. 2000) ("Swartz I"). In order to be enabling, a patent specification must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation. *Enzo Biochem, Inc. v. Calnene, Inc.*, 188 F.3d 1362, 1371, 52 USPQ2d 1129, 1135 (Fed. Cir. 1999) (quoting *Genentech, Inc. v. Novo Nordisk, A/S*, 108 F.3d 1361, 1365, 42 USPQ2d 1001, 1004 (Fed. Cir. 1997)). Under §101, any patentable invention must be useful and, accordingly, the subject matter of the claim must be operable. *Process Control Corp.*, 190 F.3d 1350, 1358, 52 USPQ2d 1029, 1034 (Fed. Cir. 1999). As a result, if the claims in a patent application fail to meet the utility requirement because they are either not useful or inoperative, they will also fail to meet the enablement requirement. See *id.*, 52 USPQ2d at 103435; see also *Swartz I*, 232 F.3d at 863, 56 USPQ2d at 1704 ("[I]f the claims in an application fail to meet the utility requirement because the invention is inoperative, they also fail to meet the enablement requirement because a person skilled in the art cannot practice

1. The Board also reversed the examiner's rejection of claims 3438 of Swartz's application under 35 U.S.C. §103. The PTO does not crossappeal this portion of the Board's decision.

the invention." A claim that requires a means for accomplishing an unattainable result is necessarily inoperative and will consequently be held invalid under either §101 or §112. *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 956, 220 USPQ 5927 596 (Fed. Cir. 1983). Utility is a question of fact. *In re Cortright*, 165 F.3d at 1353, 1356, 49 USPQ2d 1464, 1465 (Fed. Cir. 1999), while lack of enablement is a question of law based on underlying factual inquiries. See *Nat'l Recovery Techs., Inc. v. Magnetic Separation Sys., Inc.*, 166 F.3d 1190, 1194, 49 USPQ2d 1671, 1674 (Fed. Cir. 1999).

On appeal, we review the Board's findings for fact for substantial evidence. See *In re Gartside*, 203 F.3d 1305, 1315, 53 USPQ2d 1769, 1775 (Fed. Cir. 2000). We review questions of law de novo. See *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993).

Before the PTO can reject a patent application for lack of utility, it must have reason to doubt the objective truth of the statements provided in the written description. See *In re Brana*, 51 F.3d 1560, 1566, 34 USPQ2d 1436, 1441 (Fed. Cir. 1995). Once the PTO furnishes evidence demonstrating that one of ordinary skill in the relevant art would reasonably doubt the asserted utility of the invention claimed in the application, however, the burden shifts to the applicant to provide evidence sufficient to convince such a skilled individual of the invention's asserted utility. *Swartz I*, 232 F.3d at 864, 56 USPQ2d at 1704. As this court held in *In re Brana*, 51 F.3d at 1566, 34 USPQ2d at 1441, the PTO may establish a reason to doubt an invention's asserted utility when the written description "suggests an inherently unbelievable undertaking or involves implausible scientific principles."

In the instant case, the Board concluded that the record evidence supported the examiner's finding that Mr. Swartz's claims are directed to the accomplishment of an 'unattainable result,' i.e., a result that is not attained in a reproducible manner," namely cold fusion. Reviewing the references relied on by the examiner in support of its lack of utility determination, the Board determined that "there is substantial evidence of record that results in the area of 'cold fusion' were irreproducible as of the filing date of this application, and that



those skilled in this art would 'reasonably doubt' the asserted utility and operability of cold fusion." The Board further concluded that Mr. Swartz had failed to demonstrate that cold fusion could be reproducibly carried out as of the filing date of his application. Pursuant to Mr. Swartz's request for reconsideration, the Board reviewed its initial decision, subsequently declining to modify that decision.

On appeal, Mr. Swartz argues that the Board's conclusion on the issue of utility was in error for two reasons. First, he asserts that the Board erred by limiting its utility analysis to the question of cold fusion because his claimed invention possesses utility outside this realm. As the Board stated on Mr. Swartz's request for rehearing, however:

**Throughout his application, throughout the prosecution, and throughout his briefs, appellant has maintained that his invention relates to and embodies the concept known as "cold fusion." We have scoured appellant's brief and his reply brief and are unable to find therein any reference to the argument now raised by appellant in his request for reconsideration concerning utility other than "cold fusion".**

Because Mr. Swartz made no representations that his claimed invention related to anything other than cold fusion in his written description and throughout the prosecution of this application, he may not now make such representations on appeal. See *Swartz I*, 232 F.3d at 864, 52 USPQ2d at 1704 ("Mr. Swartz's attempt to show that his claims are directed to a process other than cold fusion must fail. In his written description and throughout prosecution of his application, Mr. Swartz continually represented his invention as relating to cold fusion.") Mr. Swartz's second argument, that the Board erroneously ignored several declarations, exhibits, and references that demonstrated the utility of his claimed invention, is equally unconvincing. The Board's decision reveals that it based its conclusions on a careful examination of the evidence of record, including those references that Mr. Swartz now alleges it disregarded. As the Board found, "the list of references cited by appellant reports experimental studies that present results that may indicate the presence of

[cold fusion]. However, this is insufficient to establish utility and enablement within the meaning of the relevant sections of the statute."

On the issue of enablement, Mr. Swartz again argues that the Board erred by focusing on cold fusion and ignoring relevant declarations, exhibits, and references. For the reasons stated above, however, these assertions lack merit. Moreover, as the Board correctly concluded, Mr. Swartz's claims failed to meet §101's utility requirement. As such, these claims could not be enabled under §112, 1, and the Board therefore did not err when it affirmed the examiner's rejections of Mr. Swartz's application on this ground.<sup>2</sup> See *Process Control Corp.*, 190 F.3d at 1358, 52 USPQ2d at 103435. Finally, as to the host of unsupported legal theories that Mr. Swartz advances in support of his claim, we have considered those arguments and find them entirely unpersuasive. Accordingly, the judgment of the Board is affirmed.

AFFIRMED.

Before CLEVINGER, Circuit Judge, FRIEDMAN, Senior Circuit Judge, and PROST Circuit Judge. PER CURIAM.

<sup>2</sup> The Board analyzed Mr. Swartz's application in terms of claim 13, which it found to be representative. On appeal, Mr. Swartz takes issue with this analysis, arguing that his claims do not stand or fall with claim 13. Because Mr. Swartz's claims are all directed to cold fusion, however, and because the Board properly concluded that Mr. Swartz had failed to prove that cold fusion could be conducted in a reproducible fashion at the time of the application's filing, the question of claim 13's representative nature is irrelevant, and we therefore do not discuss it further.

**APPENDIX B :: ORDER DENYING REHEARING  
DECISION 02-1240 (Serial No: 08/406,457)**

Issuing Court: US Court of Appeals for the Federal Circuit  
Number of Case: 02-1240 (Serial No: 08/406,457)  
Date of Denial: 12/3/02

**ORDER**

Before CLEVENGER, Circuit Judge, FRIEDMAN, Senior  
Circuit Judge, and PROST Circuit Judge:

A petition for rehearing having been filed by the  
APPELLANT,

UPON CONSIDERATION THEREOF, it is ORDERED that  
the petition for rehearing be, and the same hereby is,  
DENIED.

The mandate of the court will issue on December 30, 2002,  
unless another time becomes appropriate under Rule 41.

FOR THE COURT,  
-s Jan Horbaly  
Clerk

Dated: December 3, 2002

**FILED**  
U.S. COURT OF APPEALS FOR  
THE FEDERAL CIRCUIT  
DEC 3, 2002

CC: Mitchell R. Swartz  
John M. Whealan

Note: Pursuant to Fed. Cir. R. 47.6, this order is not citable  
as precedent. It is a public record.

**APPENDIX C - CLAIMS OF SUBJECT MATTER**  
**02-1240 (Serial No. 08/406,457)**

**Independent Claim 13 (A188):**

In a process for producing a product from a sample of nickel which is loaded with an isotopic fuel using electrolysis, a method to determine the optimum electrical drive condition for said sample and thereby characterize said sample that comprises in combination

holding said sample into a calorimeter containing more than two rings with barriers between said rings,

filling with liquid the volume between each said ring,

supplying said isotopic fuel for said loading into said material,

loading said isotopic fuel into said material by means of a power supply and electrical circuit,

thermally monitoring said liquid in each said ring,

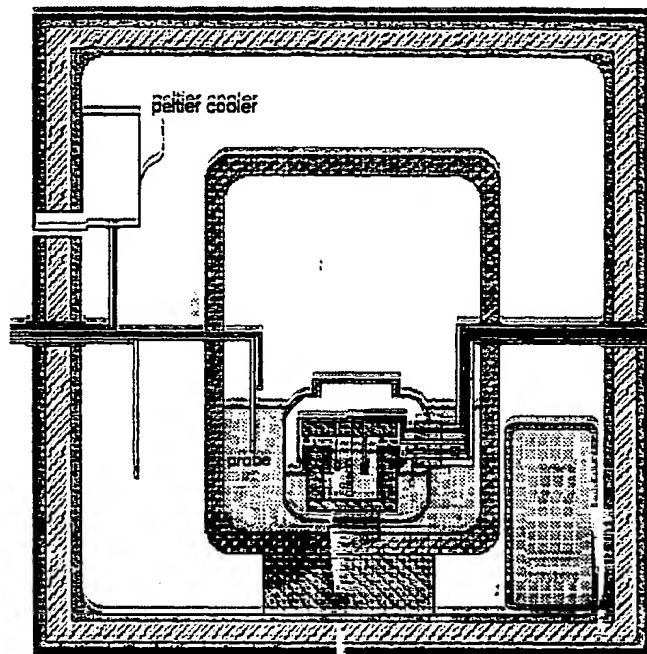
deriving the thermal response of said sample by computational means including accounting for the mass and temperature distribution of at least one barrier between said rings,

increasing through a series of at least three incremental steps the electric power drive conditions of said electrical circuit,

deriving for each said step data consisting of the thermal output relationship of said sample as function of said drive steps,

thereby deriving an optimum drive condition of said sample.

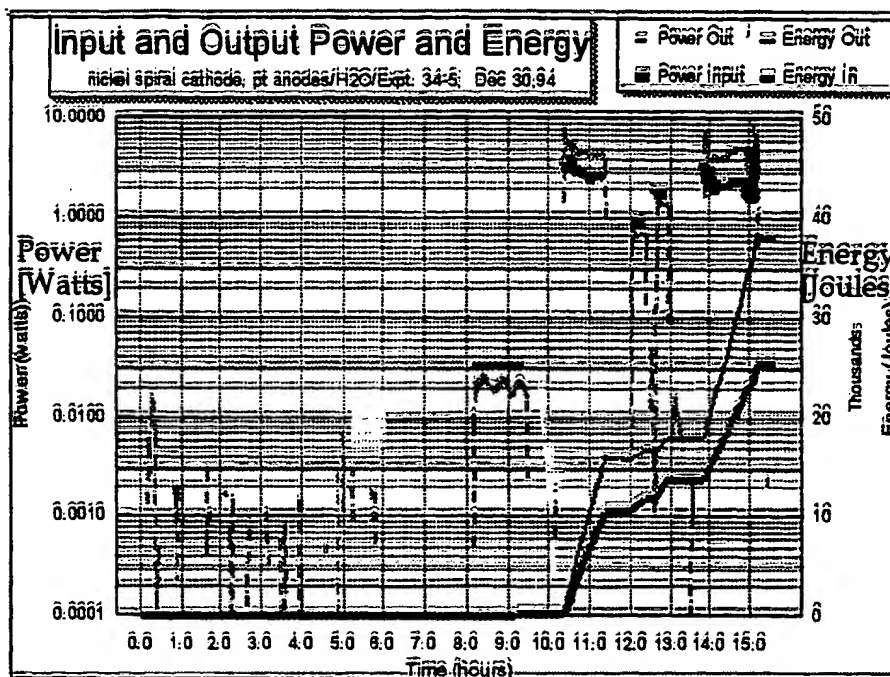
# **APPENDIX D - MULTI-RING CALORIMETER** **02-1240 (Serial No: 08/406,457)**



## **APPENDIX D - MULTI-RING CALORIMETER**

This is a schematic diagram is the central portion of the five-ring calorimeter. The figure presents the rings and barriers as located from the source-ring (inner ring containing electrodes, ohmic control, thermistor) to the environment outside of the chamber. For simplicity, not shown are the pump motor, ohmic thermal sources, or gas outlet tube (closed for all of these experiments) in ring 2, the humidity detector in ring 3, or the Styrofoam or wooden thermal isolation supports in rings 4 and 5 (confer reference 8) and the control units discussed and shown in the original Specification (A183) and Swartz(97)(A72).

**APPENDIX E - THERMAL SPECTROGRAM  
 DEMONSTRATING OPERABILITY AND UTILITY  
 02-1240 (Serial No. 08/406,457)**



**APPENDIX E - THERMAL SPECTROGRAM  
 DEMONSTRATING OPERABILITY AND UTILITY**

The Input and Output Power, and Energies, of a platinum foil anode and spiral nickel cathode [H<sub>2</sub>O] are shown. The step-like functions are the energy curves [read off the right y-axis]. The powers (thermal background, input, output) are the remainder of the curves and have a logarithmic scale (left y-axis). To the lower left is shown thermal noise (background for this experiment) ranging from 16 to a few milliwatts and extending until the first input (control) pulse at about 8 hours. This is shown in the original Specification (A184) and Swartz(97)(A76).

**United States Court Of Appeals For The Federal Circuit**

00 - 1107  
(Serial No. 07/371,937)

IN RE MITCHELL R. SWARTZ

Appeal from the Board of Patent Appeals and Interferences  
(No. 94-2921)

**Petition For Panel Rehearing**

Mitchell Swartz, ScD, MD, EE *pro se*  
P.O Box 81135  
Wellesley Hills, MA 02481

November 20, 2000

**(2) CERTIFICATE OF INTEREST [Pursuant Rule 47.4]**

Appellant, *pro se*, certifies the following:

1. The full name of every party or amicus represented by me is:

Mitchell R. Swartz, ScD, MD, EE, *pro se*

2. The name of the real party in interest represented by me is:

Mitchell R. Swartz, ScD, MD, EE, *pro se*

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are: NONE

4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this court are: NONE



### **(3) TABLE OF CONTENTS**

#### **United States Court Of Appeals For The Federal Circuit**

00 - 1107

(Serial No. 07/371,937)

(2) Certificate of Interest pursuant (Rule 47.4)	i
(3A) Table Of Contents	ii
(3B) Table Of Authorities	v
(4A) The Points Of Law Or Fact Overlooked Or Misapprehended By The Panel Of The Court	1
There Was No New Matter	1
There Was No New Claim Limitation	2
There Was Substantial Argument	2
Proposed Amendments Were Before The Board	3
Examiner Stated Changes Would Overcome Rejection	4
Definiteness Because Cited Issues Addressed	4
Definiteness Corroborated By Declarations	5
Definiteness Supported By The Claims	5
Definiteness Supported By Probative Reference	6
Definiteness By Absence Of Citation By Examiner	7
Definiteness Supported By Other Rejections	7
Applicant Argued Regarding The Claims	7
(4B) Points Of Law Overlooked Or Misapprehended	9
(5) The Argument In Support Of A Rehearing	12
(6) Decision - Attached As Addendum	15,16
(7) Certificate of Service (Rule 25 (d))	15

**(3) TABLE OF AUTHORITIES**

IN RE SWARTZ, 00-1107

	Pages
<u>Atmel Corp. v. Information Storage Devices Inc.</u> , Fed. Cir., No. 99-1082, 12/28/99	6,13
<u>Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics</u>	11,13
<u>Bloom v. Illinois</u> , 88 Ct. 499 S.Ct. 1477	11,13
<u>Cheledda v. H.E. Fortuna &amp; Brothers Inc.</u> 609 F.2d 1022 (1st Cir.1979)	9,13
<u>Duncan v. Louisiana</u> , 88 S.Ct.1444	11,13
<u>Ex parte Ionescu</u> , 222 USPQ 537, 539 (Bd. App. 1984)	5,14
<u>Ex parte Gray</u> , 10 USPQ2d 1922, 1928 (Bd. Pat. App. & Inter. 1989)	5,14
<u>Frontiero v. Richardson</u> , 93 S.Ct. 1736, 411 U.S. 677	11,13
<u>Gamez v. Toledo</u> , 42 U.S.C. §1983	11,15
<u>Gass v. Lopez</u> , 95 S. Ct 729; <u>Wood v. Strickland</u> , 95 S Ct 952	11,13
<u>Griffin v. Breckenridge</u> , 91 S Ct 179D	11,13
<u>In re Chilowsky</u> , 43 CCPA 775, 229 F.2d 457, 108 USPQ 321 (1956)	2,8,14
<u>In re Gazave</u> , 54 CCPA 1524, 379 F.2d 973, 154 USPQ 92 (1967)	2,8,14
<u>In re Hammack</u> , 427 F.2d 1384 n.5, 166 USPQ 209 n.5 (CCPA 1970)	4,14

<u>In re Jolles</u> , U.S.C.P.A., 1980, 628 F.2d 1322, 206 USPQ 885	2,8,14
<u>In re Marzocchi</u> , 439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971)	2,8, 12,14
<u>In re Morris</u> , 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed.Cir. 1997)	6
<u>In re Oetiker</u> , 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992)]	2,8, 12,14
<u>In re Prater</u> , 415 F.2d 1393, 162 USPQ 541 (CCPA 1969)	5,14
<u>In re Wands</u> , 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988)	4,14
<u>In re Zletz</u> , 893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989)]	5,14
<u>Lewis v. Bours</u> , 119 Wn.2d 667, 670, 1992	3,8,9,13
<u>Marino v. Hyatt Corporation</u> , 793 F.2d 427, 430 (1st Cir. 1986)	9
<u>Mayberry v. Penna.</u> , 91 S.8.	11,13
<u>Morrill v. Tong</u> , 390 Mass. 1207 129 (1983)	9
<u>Niehof v. Sahagian</u> , 103 A.2d 211 (Me. 1954)	11,14
<u>People v. Pierce</u> , 66 Cal. 2d 53 (1967)	11,14
<u>Seattle Box Co., v. Industrial Crating &amp; Packing, Inc.</u> , 731 F.2d 818, 221 USPQ 568 (Fed. Cir. 1984)	6
U.S. Rep volume 404, pages 520-521 (1972)	12,15
<u>United States v. Nixon</u> (1974)	11,13
<u>U. S. v. Price</u> , 86 S. Ct. 1152, 1157	11,14
<u>Weiss v. Weiss</u> , 436 N.Y.S. 2d. 862, 52 N.Y. 2d. 170 (1981)	11,14

**(4) THE POINTS OF LAW OR FACT OVERLOOKED OR MISAPPREHENDED BY THE PANEL OF THE COURT**

1. The Appellant received a Decision dated 11/8/00 which affirmed the Board's decision for putative lack of enablement under 35 U.S.C. § 112, ¶1, and indefiniteness under 35 U.S.C. § 112, ¶ 2. The Appellant respectfully requests a Rehearing on this matter, and presents herein significant Points of law and fact overlooked or misapprehended by the Court.

2. The Decision has statements which are directly contradicted by evidence already in the record. Importantly, the Decision is void of any discussion of any of the Declarations, or any of the Amicus Briefs. Thus, it cannot be determined from the record which - if any - of these submitted averments by the Declarant regarding definiteness have been formally considered by the Court.

**THERE WAS NOT NEW MATTER**

3. The Decision is incorrect regarding "new matter" when it states:

**"The examiner had refused to enter the amendments because they would raise the issue of new matter"**

[Decision 00-1107, 11/8/00]

a. The claim of purported "new matter" is false. All changes were added using the Examiner's own suggestions after conversations and missives. This has been affirmed by Declarations which are simply ignored. In particular, "deuterons" was not new material but was within the entire original specification and claims.

b. This is important because the Office unfairly denied entry of minor amendments suggested by the Examiner. They added neither new matter nor issues but were submitted after the receipt of suggestions pursuant to MPEP 707.07(j) and 706.03(d) [A124-A131]. The refusal to enter the exact language suggested by the Examiner because of a false "new matter" or "new issue" accusation amounts to not dealing honestly with the Applicant or the Court.

## **THERE WAS NO NEW CLAIM LIMITATION**

### **4. The Decision misstates the facts:**

**"Mr. (sic) Swartz proposed an additional claim limitation not suggested by the examiner .."**

This statement is incorrect. There was no additional claim limitation because in his reply, the Examiner responded that the only issue was the purported "new matter". Furthermore, the claims were evolving as a result of the communication with the Examiner. The changes were added using the Examiner's own suggestion, as affirmed by unrebutted Declarations.

## **THERE WAS SUBSTANTIAL ARGUMENT**

### **5. The Decision misapprehends the fact when it falsely states:**

**"... Mr. (sic) Swartz made no substantive arguments addressing the examiner's rejection. ... Mr. (sic) Swartz presented no substantive arguments."**

- a. This false notion from the Decision is unsupported by the record. Appellant provided substantive rebuttal evidence [In re Marzocchi] including Declarations by those skilled-in-the-art, supported by peer-reviewed published papers. Applicant came forward with this evidence as required [In re Oetiker]. Many of these responses were filed before the Notice of Appeal. Thereafter, in addition to the Appeal Brief, a Reply Brief, Second Reply Brief, and Third Reply Brief were filed. Although some were misplaced, some not recorded, some incorrectly listed as "letters", and nearly a score of pleadings listed out-of-order temporally [and even later labeled with half-"1/2"-numbers], these pleadings and several Declarations all reached the Office (A8-A11). This was proven by the Office's date-stamp. These pleadings, and unrebutted Declarations support the fact that there was no new matter. They addressed with specificity --substantially and extensively and fully-- all matters and all issues [In re Gazave; In re Chilowsky; In re Jolles]. The unrebutted Declarations have been substantively ignored despite remand Orders requiring a reply to the Straus and Swartz Declarations which proved definiteness. Attention is directed to the fact that the Board had the authority to Order the Office to substantively respond pursuant to MPEP

§1211. The Office has not responded with specificity and substance as the Board ordered.

- b. This statement in the Decision is unsupported by the unrebutted Declarations. The Declarations fully address all matters criticized by the Office (A90-A99) regarding the fact that there was no new matter. The Declarations prove compliance and that a person of ordinary skilled-in-the-art would have understood the inventor to have been in possession of the claimed invention at the time of filing. The Declarations [e.g. Straus (A44-A48) and Swartz (A18-A43)] confirm definiteness as recited in claim 32. The Court, like the Board was obligated by law to assume that Appellant's Declarants' unrebutted assertions - many made before the Appeal-- are true [Lewis v. Bours, 119 Wn.2d 667, 670, 1992], but has not. Instead, the Declarations remain ignored in their factual, substantive and engineering content because they precisely refute the Decision's incorrect statements and erroneous conclusion.
- c. Most importantly, the Decision is void of any discussion of any of the Declarations, or any of the Amicus Briefs, on any of these matters. Thus it cannot be determined from the record which - if any - of these submitted averments by the Declarant regarding that there was no new matter have been formally considered by the Court. The Court should have indicated which, if any, of the averments in the Declarations and Amicus Briefs were formally considered and, if so, how they reached their conclusion. The Decision has erred by omitting exactly why this evidence in the record regarding that there was no new matter, and supporting Applicant has not been addressed.

#### **PROPOSED AMENDMENTS WERE BEFORE THE BOARD**

6. The Decision misapprehends the facts when it falsely states:
- "Mr.(sic) Swartz contends that the Board should have addressed the examiner's refusal to enter his proposed amendments after the final rejection. That decision, however, was not before the Board. "**
- This statement in the Decision is unsupported by the Appeal Brief before the Board. The issues were before the Board [cf. averments numbers 28 and 29 and also cited 1:192c(6)(v)].

## **EXAMINER STATED CHANGES WOULD OVERCOME REJECTION**

7. The Decision misapprehends the facts when it falsely states:

**"While the examiner made some suggestions, he made no representation that those suggestions would overcome the indefiniteness rejection. "**

a. The Decision is incorrect. The Examiner had communications with the Applicant indicating that this was sufficient. Also, "... indefiniteness in claim language is of semantic origin" [In re Hammaek, 427 F.2d 1384 n.5, 166 USPQ 209 n.5 (CCPA 1970)] and indefiniteness is the opposite of definiteness. Appellant has fully complied with the definiteness requirement of the second paragraph of 35 U.S.C. §112. The original specification and claim adequately presented the claimed invention so that an artisan, or those skilled in the art, could practice it without undue experimentation [In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed.Cir.1988)]. Definiteness is a characteristic of a patent claim in which claim language makes the scope of the claim clear to a person skilled in the art to which the invention pertains [MPEP 2173, MPEP 2173.02, MPEP 2173.05(a)]. Pursuant, to MPEP 2173, Applicant claimed with particularity, and did point out and distinctly claim the invention. Applicant's claims are therefore definite.

b. The Board and Office invented the purported lack of "definiteness" by its fabrication of "excess heat" [not mentioned at all in the original specification and claims, not discussed in the Decision] and flawed by the erroneous fabrication linking a "natural frequency" to "nuclear reactions". The Board, and now the Decision, has refused to accurately discuss the invention as taught in the original specification and claims. The Decision points to other art out of a cloth not even made from the original specification and claims. The claims are precise, clear, correct, and unambiguous to a person skilled in the art and therefore there was definiteness because the specification did conclude claims particularly pointing out and distinctly claiming the subject matter.

## **DEFINITENESS BECAUSE OF CITED ISSUES ADDRESSED**

c. There was definiteness because, pursuant to 707.07(d) the Examiner pointed out wherein the indefiniteness resided, and then the Appellant (then Applicant)

submitted those precise corrections which the Examiner suggested. Each and every one. 35 U.S.C. 112, second paragraph requires the examiner had to provide reasons why the terms in the claims and/or scope of the invention are unclear "in a positive and constructive way, so that minor problems can be identified and easily corrected, and so that the major effort is expended on more substantive issues." All definiteness issues were addressed. If there were other issues, the Examiner should have further explained what the rejection is based on [Ex parte Ionescu, 222 USPQ 537, 539 (Bd. App. 1984)].

### **DEFINITENESS CORROBORATED DECLARATIONS**

- d. There was definiteness because, supplementing the detailed specification, the Applicant submitted further corroboratory expert testimony [Ex parte Gray, 10 USPQ2d 1922, 1928 (Bd. Pat. App. & Inter. 1989)] including Declarations and Amicus Curiae Briefs --which must be reviewed carefully.
- e. The Decision has ignored that the Board did not accurately discuss the invention as it was actually taught in the original specification and claims. The Decision statement is unfair and discriminatory against the Appellant because the Decision simply ignores the fact that the Board did not even address the present invention which is about a vibrator that measures loading as it was actually taught in the original specification and claims. Instead, the Board points to other art out of a cloth not even made from the original specification and claims, even though the claimed invention should be the focus of the definiteness requirement.

### **DEFINITENESS SUPPORTED BY THE CLAIMS**

- f. There was definiteness because the pending claims must be given the broadest reasonable interpretation consistent with the specification [In re Prater, 415 F.2d 1393, 162 USPQ 541 (CCPA 1969); also MPEP Section 2111 - Section 2111.01] and the specification stated the meaning of the terms in the claims [In re Zletz, 893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989)].



- g. Furthermore, there was definiteness because pursuant to 2173.05(a) the meaning of every term used in the claims was apparent from the prior art and from the specification and drawings at the time the application was filed
- h. There was definiteness because the claims must each be given the broadest reasonable interpretation, and this interpretation is consistent with that which one who is skilled-in-the-art would reach [In re Morris]. In this case, it is corroborated by both the Declarations and the Amicus Briefs.
- i. There was definiteness because the mere fact that a term or phrase used in the claim has no antecedent basis in the specification disclosure does not mean, necessarily, that the term or phrase is indefinite.
- j. There was definiteness because the preamble of claim 32 recites the purpose of the process, the body of the claim does not refer back to the preamble, and the process steps are able to stand alone (MPEP 2111.02).
- k. There was definiteness because pursuant to 2173.05(b) the fact that claim language may not have been precise cannot automatically render the claim indefinite under 35 U.S.C. 112, second paragraph [Seattle Box Co., v. Industrial Crating & Packing, Inc., 731 F.2d 818, 221 USPQ 568 (Fed. Cir. 1984)]. Acceptability of the claim language depends on whether one of ordinary skill in the art would understand what is claimed, in light of the specification and in this case there are unrebutted Declarations and Amicus Briefs [Ex parte Porter, 25 USPQ2d 1144, 1145 (Bd. Pat. App. & Inter. 1992)].

## DEFINITENESS SUPPORTED BY PROBATIVE REFERENCE

- l. There was definiteness because Appellant provided --in addition to the detailed specification-- corroboratory probative reference in the form of peer-reviewed publications [including Swartz, M., 1996, "Possible Deuterium Production From Light water excess enthalpy experiments using Nickel Cathodes", *Journal of New Energy*, 3, 68-80 (1996)] with further adequate description of structure in view of the understanding of one skilled in the art [Atmel Corp. v. Information Storage Devices Inc., Fed. Cir., No. 99-1082, 12/28/99].

## **DEFINITENESS BY ABSENCE OF CITATION BY EXAMINER**

m. There was definiteness because pursuant to 707.07(g) there has never been stated any full development of reasons for such beyond the simple semantic issues which Applicant totally and timely addressed. Instead the Office has stated a mere conclusion coupled with a stereotyped expression involving "excess heat" which was not even mentioned in either the original specification or claims.

## **DEFINITENESS SUPPORTED BY OTHER REJECTIONS**

n. There had to have been definiteness because the rejection under 35U.S.C.102 of claims 32 and 35-41 over Johnson (D8) could not have been made and sustained through a final rejection, had the invention truly been without definiteness. The fact that claim 32 was found by the examiner to be anticipated by Johnson (AB26) shows that the invention obviously and absolutely had definiteness.

## **APPLICANT ARGUED REGARDING THE CLAIMS**

8. The Decision misreports the facts when it falsely states:

**"...Mr. (sic) Swartz argued only that, after the final office action rejecting all pending claims, he had filed two amendments that addressed the indefiniteness rejection. ... he continued to argue only that his proposed amendments properly addressed the rejection under § 112, ¶ 2."**

[Decision 00-1107, 11/8/00]

a. This statement in the Decision is unsupported by the record. Appellant provided substantive rebuttal, plus exhibits, plus Declarations. For example, Applicant argued that the words "material", "isotope", and "fuel" were defined. The words are well-known and were fully-discussed in the original specification and the other cited materials. Furthermore, the Office properly used these words for more than a decade, consistent with Webster's dictionary. In addition, Applicant argued that claims 32, 38, 40, and 35 do not even mention "nuclear" in the preamble, and there can logically be no such arguments by the Board. These and other arguments are simply ignored.

- b. Importantly, Appellant provided substantive rebuttal evidence [In re Marzocchi] including Declarations by those skilled-in-the-art, supported by peer-reviewed published papers. Applicant came forward with this evidence as required [In re Oetiker]. Many of these responses were filed before the Notice of Appeal. Thereafter, in addition to the Appeal Brief, a Reply Brief, Second Reply Brief, and Third Reply Brief were filed. Although some were misplaced, some not recorded, some incorrectly listed as "letters", nearly a score of pleadings listed out-of-order temporally, and even later labeled with half-"1/2"-numbers, these pleadings and several Declarations all reached the Office (A8-A11) as proven by the Office's date-stamp. These pleadings, and unrebutted Declarations and the *Amici Curiae* presented to this Court support definiteness. They addressed with specificity --substantially and extensively and fully-- all matters and all issues [In re Gazave; In re Chilowsky; In re Jolles]. The unrebutted Declarations have been substantively ignored despite remand Orders requiring a reply to the Straus and Swartz Declarations which did prove definiteness. Attention is directed to the fact that the Board had the authority to Order the Office to substantively respond pursuant to MPEP §1211. The Office has not responded with specificity and substance as the Board ordered.
- c. This statement in the Decision is unsupported by the unrebutted Declarations. The Declarations fully address all matters criticized by the Office (A90-A99) regarding definiteness. The Declarations prove compliance with 112 2 and that a person of ordinary skilled-in-the-art would have understood the inventor to have been in possession of the claimed invention at the time of filing. The Declarations, including Straus (A44-A48) and Swartz (A18-A43), confirm definiteness as recited in claim 32. The Court, like the Board was obligated by law to assume that Appellant's Declarants' unrebutted assertions --many made before the Appeal-- are true [Lewis v. Bours, 119 Wn.2d 667, 670, 1992], but has not. Instead, the Declarations remain ignored in their factual, substantive and engineering content because they precisely refute the Decision's incorrect statements and erroneous conclusion.

- d. In addition, the Remand Orders from the Board ordering the Examiner to respond to the Declarations were ignored in substance. The Declarations must be answered in specificity about any such putative "nondefiniteness", but have not been. The Decision simply ignores the entire matter.
- e. Most importantly, the Decision is void of any discussion of any of the Declarations, or any of the Amicus Briefs, on any these matters. Thus it cannot be determined from the record which - if any - of these submitted averments by the Declarant regarding definiteness have been formally considered by the Court. The Court should have indicated which, if any, of the averments (or pages) in the Declarations and Amicus Briefs were formally considered and, if so, how they reached their conclusion. The Decision has erred by omitting exactly why this evidence in the record regarding definiteness, and supporting Applicant has not been addressed.

#### **(4) THE POINTS OF LAW OVERLOOKED OR MISAPPREHENDED**

9. There are several points of law overlooked or misapprehended by the panel of the Court.

- a. The Decision rejects the reasoning of the Appeals Court in Marino v. Hyatt Corporation, 793 F.2d 427, 430 (1st Cir. 1986), Morrill v. Tong, 390 Mass. 1207 129 (1983), Chelebda v. H.E. Fortuna & Brothers Inc. 609 F.2d 1022 (1st Cir. 1979) by ignoring the unrebutted Declarations despite being Obligated by law to assume that the unrebutted Declarations are true [Lewis v. Bours, 119 Wn.2d 667, 670, 1992]. Appellant's Brief cited important and relevant Declarations which were received by the Office and were systematically ignored -- like the Amicus Curiae Briefs. They refute the Decision's unsupported statements and erroneous conclusion. The Declarants --and Amici Curiae-- are persons skilled in the art. Their unrebutted testimony refer to definiteness, but have been ignored in the Decision regarding their factual evidence. Thus it cannot be determined from the record which - if any - of these unrebutted facts regarding definiteness, operability and utility have been formally considered by the Court.

- b. The Decision rejects the reasoning of the Board by ignoring the failure of the Office to follow or substantively respond to the Remand Order from the Board which remains ignored. The Board had the authority to do so pursuant MPEP §1211.
- c. The Decision's finding that **"the Board did not err in failing to review the examiner's refusal to enter amendments after final rejection"** rejects the reasoning of MPEP 707.07(j) and MPEP 706.03(d) == and equal protection issues provided by the Constitution. Simply put, it is unfair for the Office to deny entry of Amendments (A187) suggested by the Examiner, when said amendments added neither new matter nor issues, and could not have been offered before the receipt of suggestions pursuant to MPEP 707.07(j) and 706.03(d), and which responded to, and adopted, and only offered each suggestion made by the Examiner (A85-A90, A124-131, also A83-A84). As admitted by this Court [Decision 00-1107, 11/8/00]:

**"Appellant gave substantive arguments for entry including specific and substantial arguments against the rejection.**

Attention is directed to the unrebutted, uncommented upon, Amicus Briefs, one of which stated that the Examiner's suggestion to add language to the claims in order to overcome the rejection under 35 U.S.C. 112 ¶2 and then following with a refusal to enter the exact language suggested because of a "new matter" or "new issue" accusation amounts to not dealing honestly with the Applicant. As Dr. Valone stated,

**"the suggestion of the examiner to add language ... in order to overcome the rejection under 35 USC 112 second paragraph and then following with a refusal to enter the exact language suggested ... amounts to not dealing honestly with the appellant and not the type of behavior that is normally endorsed by the Patent Office"**

- d. The Decision is inconsistent with Federal Rule Civ. Proc. 60(b) because the Decision is contradicted by evidence in the record (*vide supra*).
- e. The Decision is inconsistent with 18 U.S.C. §1001 because it perpetuate false statements, out of cloth not even made from the original specification and

claims. These statements have bearing [People v. Pierce] and are made on Federal documents [Nichot'f v. Sahagian] and should be corrected.

- f. The Decision rejects the reasoning of The United States Constitution [Clause 8 of Section 8, Article I] by continuing the knee-jerk attempted elimination of an entire field involving energy and United States security.
- g. The Decision rejects the reasoning of The United States Constitution [Article VI] because Article VI prohibits actions that interfere with the Constitution or laws passed by Congress [ Clause 8 of Section 8, Article I].
- h. The Decision is inconsistent with 18 U.S.C. 2071 because it ignores that portions of Appellant's submitted pleadings were removed and censored.
- i. The Decision rejects the reasoning of The United States Constitution [Article I, Section 2] that Appellant is entitled to the privileges and immunities of citizens in the other states. Appellant cited Ahern (5,411,654) and Patterson (5036031, 5318675, 5372688, 5036031) who received US patents in cold fusion by not inadequately citing prior art. Therefore, the Decision is arbitrary and encourages selective discrimination and civil rights violations under color of law [U. S. v. Price, 86 S. Ct. 1152, 1157], thereby rejecting the reasoning of the Supreme Court's decision in United States v. Nixon (1974) that all are "equal under the law".
- j. The Decision rejects the reasoning of The United States Constitution [14th Amendment] that Appellant is entitled to an impartial tribunal [28 U.S. Code Section 144, Mayberry v. Penna., 91 S.8.; Bloom v. Illinois, 88 Ct. 499 S.Ct. 1477; Duncan v. Louisiana, 88 S.Ct.1444] and equal protection of the laws. Ignoring unrebutted Declarations, Amicus Briefs, and due process, patently violates the 14th Amendment's "equal protection" clause [Frontiero v. Richardson, 93 S.Ct. 1736, 411 U.S. 677; Weiss v. Weiss, 436 N.Y.S. 2d. 862, 52 N.Y. 2d. 170 (1981)] with serious implications [Gass v. Lopez, 95 S. Ct 729; Wood v. Strickland, 95 S Ct 982; U.S. v. Price, 86 S Ct 1152, 1157, Footnote 7; Griffin v. Breckenridge, 91 S Ct 179D; Gamez v. Toledo, 42 U.S.C. §1983, and Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics].

- k. The Decision rejects the reasoning of the Supreme Court that a *pro se* litigant is entitled to less stringent standards [U.S. Rep, 404, 520-521 (1972)].

#### **(5) THE ARGUMENT IN SUPPORT OF A REHEARING**

10. The Decision should logically match and be accurate consistent with said record including the Declarations, but it does not. The facts in the record differ from what the Decision purports in several ways as discussed above.

- a. The Decision ignores that the Office's Answer did not read on the original specification and claims but that the rejection was solely directed to another invention by use of a carbon-copy attack on the words "excess heat" which were never even mentioned in the original specification and claims. The Appellees are an agency which, one can reasonably assume, have presented their fabrications "tongue-in-cheek". It is further submitted that if the Appellee's esteemed counsel and staff must rely upon reference to art cut of a cloth other than this specification and claims, then their position must indeed be rather weak and dictate allowance of the present invention.
- b. The original specification and claims complied and conformed with the Patent Act. The original specification and claims 32-43 taught the subject matter defined by each of the rejected claims, set forth the best mode contemplated, and distinctly point out and claim the subject matter which constitutes the invention. There was no new matter added. The changes were minor and added neither new matter nor issues, and could not have been offered before the receipt of said suggestions pursuant to MPEP 707.07(j) and 706.03(d) [A124-A131]. There was no new claim limitation beyond that which was discussed with the Examiner. The claims were definite after the precise suggestions examiner stated would overcome said definite rejection. This was corroborated by unrebutted declarations, supported by the claims and additional probative reference.
- c. There was substantial argument addressing the examiner's rejection consistent with In re Marzocchi and In re Oetiker. The Declarations fully address all matters criticized by the Office (A90-A99) regarding that there was no new



matter and confirm definiteness. The Court, like the Board was obligated by law to assume that Appellant's Declarants' unrebutted assertions - many made before the Appeal-- are true [Lewis v. Bours, 119 Wn.2d 667, 670, 1992], but has not.

d. The question of the proposed amendments was before the board.

11. The unrebutted Declarations and Amicus Briefs have been ignored. The Decision is void of any discussion of any of the Declarations, or any of the Amicus Briefs, on any these matters. Thus it cannot be determined from the record which - if any - of these submitted averments by the Declarant regarding definiteness have been formally considered by the Court. The Court should have indicated which, if any, of the averments (or pages) in the Declarations and Amicus Briefs were formally considered and, if so, how they reached their conclusion. The Decision has erred by omitting exactly why this factual, substantive and engineering evidence in the record regarding definiteness, regarding that there was no new matter, and supporting Applicant has not been addressed.

12. The Decision must comply with Constitutional authority and law. Instead, it fails to honor the letter of the law. Neither the Office, nor the Court, has produced no evidence to the contrary.

a. The Decision is not consistent with 18 U.S.C. §1001, 18 U.S.C. 2071, 28 U.S. Code Section 144, 35 U.S.C. § 112, ¶ 2 or 35 U.S.C. § 112, ¶1.

b. The Decision rejects the reasoning of the Atmel Corp. v. Information Storage Devices Inc., Fed. Cir., No. 99-1082, 12/28/99, Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics, 88 Ct. 499 S.Ct. 1477, Chelebda v. H.E. Fortuna & Brothers Inc., 609 F.2d 1022 (1st Cir. 1979), Duncan v. Louisiana, 88 S.Ct. 1444, Frontiero v. Richardson, 93 S.Ct. 1736, 411 U.S. 677, Gamez v. Toledo, 42 U.S.C. §1983, Gass v. Lopez, 95 S. Ct 729, Griffin v. Breckenridge, 91 S Ct 179D, Lewis v. Bours, 119 Wn.2d 667, 670, 1992, Marino v. Hyatt Corporation, 793 F.2d 427, 430 (1st Cir. 1986), Mayberry v. Penna., 91 S.8., Merrill v. Tong, 390 Mass. 1207 129 (1983),



Nichot'f v. Sahagian, People v. Pierce, Seattle Box Co., v. Industrial Crating & Packing, Inc., 731 F.2d 818, 221 USPQ 568 (Fed. Cir. 1984); U.S. v. Price, 86 S. Ct. 1152, 1157, U.S. Rep volume 404, pages 520-521 (1972); U.S. v. Price, 86 S Ct 1152, 1157, Footnote 7, United States v. Nixon (1974); Weiss v. Weiss, 436 N.Y.S. 2d. 862, 52 N.Y. 2d. 170 (1981), and Wood v. Strickland, 95 S Ct 952.

e. The Decision rejects the reasoning of In re Chilowsky, In re Jolles, In re Gazave, In re Hammack, 427 F.2d 1384 n.5, 166 USPQ 209 n.5 (CCPA 1970), In re Marzocchi, In re Morris, In re Oetiker, In re Prater, 415 F.2d 1393, 162 USPQ 541 (CCPA 1969), In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988), and In re Zletz, 893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989) [also Ex parte Gray, 10 USPQ2d 1922, 1928 (Bd. Pat. App. & Inter. 1989, Ex parte Ionescu, 222 USPQ 537, 539 (Bd. App. 1984), Ex parte Porter, 25 USPQ2d 1144, 1145 (Bd. Pat. App. & Inter. 1992)].

d. The Decision ignores violations of MPEP 1211, MPEP 2173.05(a) , MPEP 2173.02, MPEP 2173.05(b), MPEP 706.03(d), MPEP 707.07(g) and (j).

e. Importantly, the Decision is not Constitutional because it rejects the The United States Constitution [including but not limited to Article I, Section 2, Clause 8 of Section 8, Article I, Article VI, and the 14th Amendment.

13. The Decision ignores the American Bar Association's comments on new description guidelines of the PTO

[<http://www.uspto.gov/web/offices/com/sol/comments/utilitywd/aba.pdf>]


which says that the PTO should be "technologically neutral." It was unfair for the Office to deny entry of Amendments (A187) with minor changes to overcome possible indefiniteness suggested by the Examiner in writing and in conversations, when they added neither new matter nor issues, and could not have been offered before the receipt of suggestions pursuant to MPEP 707.07(j) and 706.03(d). This and other matters discussed, including the missing pleadings, do not comport with any notion of fair play of justice.

14. The notions of equity and Constitutional issues hang in balance and although form and procedure often dominate in these proceedings, there should be favored truth, substance, justice and fair play. It is completely within the Court's discretion to correct the inaccurate description of facts, and to enforce the law and justice, and the general rule, especially where a party is *pro se*, is to rehear and correct such matters unless the Appellees can establish real prejudice.

Wherefore, Appellant respectfully requests that this honorable Court allow this Request for Rehearing concerning the matter of the Examiner's arbitrary rejection of claims 32 through 43, and order any other relief as the Court deems just, proper, fair and equitable.

Appellant regrets inadequacies that reflect a lack of legal education in this Request for Reconsideration, but the U.S. Supreme Court has ruled that any *pro se* litigant is entitled to less stringent standards [U.S. Rep volume 404, pages 520-521 (1972)].

Respectfully submitted,  
November 20, 2000

  
\_\_\_\_\_  
Mitchell Swartz, MD, ScD, EE, Appellant, *pro se*  
P.O. Box 81135  
Wellesley Hills, MA 02481

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### (6) ADDENDUM

Requirement met by Decision bound with This Petition.

### (7) CERTIFICATE OF SERVICE (Rule 25 (D))

Appellant certifies that he has complied with Rule 25 (d). Appellant mailed two (2) copies of the above first class prepaid to Appellee's counsel, Attorney Mark Nagumo, Associate Solicitor, 2121 Crystal Drive, P.O. Box 15667, Arlington, Virginia, 22215, this November 20, 2000.



NOTE: Pursuant to Fed. Cir. R. 47.6, this disposition is not citable as precedent. It is a public record. This disposition will appear in tables published periodically.

## United States Court of Appeals for the Federal Circuit

00-1107  
(Serial No. 07/371,937)

IN RE MITCHELL R. SWARTZ

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DECIDED: November 8, 2000

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Before PLAGER, Circuit Judge, ARCHER, Senior Circuit Judge, and DYK, Circuit Judge.

PER CURIAM.

### DECISION

Mitchell R. Swartz appeals from the decision of the Board of Patent Appeals and Interferences (Board), Appeal No. 94-2921, affirming the examiner's final rejection of claims 32-43 of application Serial No. 07/371,937 for lack of operability or utility under 35 U.S.C. § 101, lack of enablement under 35 U.S.C. § 112, ¶ 1, and indefiniteness under 35 U.S.C. § 112, ¶ 2. We affirm the Board's decision.

The Board summarily affirmed the examiner's rejection of claims 32-43 under § 112, ¶ 2, because Mr. Swartz made no substantive arguments addressing the examiner's rejection. In the numerous briefs he filed with the Board, Mr. Swartz argued only that, after the final office action rejecting all pending claims, he had filed two amendments that addressed the indefiniteness rejection. The examiner had refused to enter the amendments because they would raise the issue of new matter, and the

Commissioner had denied Mr. Swartz's petition under 37 C.F.R. § 1.181 requesting review of the examiner's decision. Although Mr. Swartz received notice that the brief he filed with the Board did not comply with the requirements of 37 C.F.R. § 1.192(c) because it did not address the indefiniteness rejection, he continued to argue only that his proposed amendments properly addressed the rejection under § 112, ¶ 2. Mr. Swartz reiterates that argument on appeal to this court.

We agree with the Board that Mr. Swartz did not present any substantive arguments addressing the rejection under § 112, ¶ 2. Mr. Swartz argued that the proposed amendments would overcome the rejection, but the amended claims were not before the Board. The Board could consider only the rejection of the non-amended claims, and Mr. Swartz presented no reasons why the Board should sustain the examiner's indefiniteness rejection of those claims.

Mr. Swartz contends that the Board should have addressed the examiner's refusal to enter his proposed amendments after the final rejection. That decision, however, was not before the Board. Nor is that decision before this court. Nevertheless, we observe that Mr. Swartz's proposed amendments were not merely amendments suggested by the examiner to address the indefiniteness problem. While the examiner made some suggestions, he made no representation that those suggestions would overcome the indefiniteness rejection. More importantly, Mr. Swartz proposed an additional claim limitation not suggested by the examiner, and it was that limitation that the examiner determined would raise the issue of new matter.

We conclude that the Board properly affirmed the examiner's rejection under § 112, ¶ 2 because Mr. Swartz presented no substantive arguments. We also conclude

that the Board did not err in failing to review the examiner's refusal to enter amendments after final rejection. Because we affirm the Board's decision sustaining the rejection under § 112, ¶ 2, we need not address the Board's decision sustaining the rejections under § 101 and § 112, ¶ 1.

**United States Court Of Appeals For The Federal Circuit**

00 - 1107  
(Serial No. 07/371,937)

IN RE MITCHELL R. SWARTZ

Appeal from the Board of Patent Appeals and Interferences  
(No. 94-2921)

**REPLY BRIEF**

Dr. Mitchell Swartz, *pro se*  
P.O. Box 81135  
Wellesley Hills, MA 02481

June 15, 2000

# **(1) TABLE OF CONTENTS**

**United States Court Of Appeals For The Federal Circuit**

**00 - 1107**

**(Serial No. 07/371,937)**

<b>(1) TABLE OF CONTENTS</b>	<b>i</b>
<b>(2) TABLE OF AUTHORITIES</b>	<b>iii</b>
<b>(3) BRIEF FACTUAL BACKGROUND</b>	<b>1</b>
<b>(4) ERRORS OF FACT</b>	<b>1</b>
<b>Appellee's Errors About The Invention</b>	<b>1</b>
<b>Vibration Is Not "Fusion"</b>	<b>1</b>
<b>"Fusion" Is Not Required For The Method To Monitor Vibration</b>	<b>2</b>
<b>"Isotope", "Fuel", "Material," And "Products" Are Well Understood</b>	<b>2</b>
<b>Board Failed To Consider Declarations</b>	<b>3</b>
<b>Board Failed To Consider Evidence</b>	<b>3</b>
<b>Publications Confirm Teachings Were Correct</b>	<b>4</b>
<b>(5) APPELLEE'S ERRORS ABOUT THE CLAIMS</b>	<b>5</b>
<b>Claims Were Provided By The Examiner And Are Definite</b>	<b>5</b>
<b>Appellant Did Respond In Several Briefs</b>	<b>5</b>
<b>There Were No New Issues</b>	<b>6</b>
<b>Claims Were Argued Separately</b>	<b>7</b>

<b>(6) APPELLEE'S ERRORS ABOUT THE OTHER ART</b>	<b>8</b>
<b>Although Not Relevant To A Method Of Monitoring, Gold Fusion Exists</b>	<b>8</b>
<b>MIT Phase-II Experiment And Sensitivity</b>	<b>12</b>
<b>(7) ERRORS OF OMISSION</b>	<b>15</b>
<b>(8) ERRORS OF LAW</b>	<b>18</b>
<b>The Correct Standard Of Review</b>	<b>18</b>
<b>Patent Has Operability And Utility</b>	<b>19</b>
<b>Laws Ignored By Appellees</b>	<b>25</b>
<b>Appellees Ignore Evidence Of A Federal Crime</b>	<b>26</b>
<b>(9) SUMMARY STATING THE PRECISE RELIEF SOUGHT</b>	<b>27</b>
<b>(10) CERTIFICATE OF SERVICE Rule 25 (d)</b>	<b>28</b>
<b>(11) CERTIFICATE OF COMPLIANCE Rule 32 (a) 7</b>	<b>28</b>
<b>(12) CERTIFICATE OF MAILING</b>	<b>28</b>



## (2) TABLE OF AUTHORITIES

### IN RE SWARTZ, 00-1107

Bivens, 403 U.S. at 389	19
Chelebda v. H.E. Fortuna & Brothers Inc. 609 F.2d 1022 (1st Cir. 1979)	22
Cross v. Iizuka, 753 F.2d 1040, 1044 n.7, 224 USPQ 739, 742 n.7 (Fed. Cir. 85)	24
Donatelli v. National Hockey League, 893 F.2 459, 465 (1st Cir. 1990))	26
Duncan v. Louisiana, 88 S.Ct.1444	19
Droukas v. Divers Training Academy, 375 Mass. 149, 159 (1978)	22
E.I. du Pont de Nemours & Co. v. Berkley & Co., 620 F.2d 1247, 1258 n.10, 1260 n. 17, 205 USPQ 1, 8 n. 10, 10 n. 17 (8th Cir.1980)	24
Envirotech Corp. v. Al George, Inc., 730 F.2d 753, 762, 221 USPQ 473, 480 (Fed. Cir. 1984)	22
Frontiero v. Richardson, 93 S.Ct. 1736, 411 U.S. 677	19
Gamez v. Toledo, 100 S. Ct. 1920	19
Green v. Elgie, 5 Q.S. 99, 1843	25
In re Alton, 94-1495, (Serial No. 06/483,451)	5
In re Brana, 51 F.3d 1560,1564 n.12, 34 USPQ2d 1436,1439 n.12 (Fed.Cir.95)]	22
In re Chilowsky, 43 CCPA 775, 229 F.2d 457, 108 USPQ 321 (1956)	5,10
In re Ferens, 417 F.2d 1072, 1074, 163 USPQ 609, 611 (CCPA 1969)	12
In re Fouche , 439 F.2d 1237, 1243, 169 USPQ 429, 434, (CCPA 1971))	21
In re Gazave, 54 CCPA 1524, 379 F.2d 973, 154 USPQ 92 (1967)	5,10
In re Jolles, U.S.C.P.A., 628 F.2d 1322, 206 USPQ 885, (1980)	3,5,10
In re Kaslow, 707 F.2d 1366, 1376, 217 USPQ1089, 1096 (Fed. Cir. 1983)].	8
In re Marzocchi, 439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971)	22
In re Morris, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997)	21
In re Oberwener, 115 F.2d 826, 829, 47 USPQ 455, 458 (CCPA 1940)	12
In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (1992)	4,21
In re Vaeck, 947 F.2d 488, 495-96, 10 USPQ2d 1438, 1444 (Fed. Cir. 1991)	24
In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988)	24
In re Ziegler, 992 F.2d 1197, 1200, 26 USPQ2d 1600, 1603 (Fed. Cir. 1993)	22

in re Zurko, 142 F.3d 1447, 1449, 46 USPQ2d 1691, 1693 (Fed. Cir.), <i>cert. granted</i> , 119 S. Ct. 401 (1998)	24
Johns Hopkins Univ. v. Cellpro, Inc., 152 F.3d 1342, 1354, 47 USPQ2d 1705, 1713 (Fed. Cir. 1998)	21
Krantz and Croix v. Olin, 148 USPQ 659, 661-62 (CCPA 1966); <i>Chisum on Patents</i> , 4.04[4] [1983]	24
Lancey v. United States, 356 F. 2d 407 (9th Cir. 1966)	25
Leasco Data Processing Equip. Corp. v. Maxwell, 468 F.2d 1326 (2d Cir. 1972)	26
Lewis v. Bours, 119 Wn.2d 667, 670, 1992	22
Marino v. Hyatt Corporation, 793 F.2d 427, 430 (1st Cir. 1986)	22
Mayberry v. Penna., 91 S.8.	19
Morrill v. Tong, 390 Mass. 1207 129 (1983)	22
Newman v. Ouigg, 877 F.2d 1575, 1581, 11 USPQ2d 1340, 1345 (1989)	20
Niehof v. Sahagian, 103 A.2d 211 (Me. 1954)	25,26
Osborn v. Bank of United States, 22 U.S. (9 Wheat) 738 (1824)]	18,26
Peckham v. Continental Casualty Ins. Co., 895 F.2d 830, 836 (1st Cir. 1990)	26
People v. Pierce, 66 Cal. 2d 53 (1967)	25,26
Pizarro v. Hotels Concorde Int'l, C.A., 907 F.2d 1256 (1st Cir. 1990)	26
Rannard v. Lockheed Aircraft Corp., 26 Cal. 2d 149 (1945)	26
Raytheon Company V. Roper Corporation, U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592	24
Sawtelle v. Farrell, 70 F.3d 1381, 1387 (1st Cir. 1995)	26
Standard Oil Co. (Indiana) v. Montedison, S.P.A., 664 F.2d 356, 375, 212 USPQ 327, 344 (3rd Cir. 1981), <i>cert. denied</i> , 456 U.S. 915, 102 S.Ct. 1769, 72 L.Ed.2d 174 (1982)	24
U. S. v. Price, 86 S. Ct. 1152, 1157	25,26
U.S. Rep, 404, 520-521 (1972)	27
United States v. Nixon (1974)	18,19
Weiss v. Weiss, 436 N.Y.S. 2d. 862, 52 N.Y. 2d. 170 (1981)	19
Wertheim, 541 F.2d at 263, 191 USPQ at 97	21
Yorty v. Chandler, 13 Cal. App. 3d 467 (1970)	26

1. Appellees' Brief has several errors of fact and law. This Reply Brief points to evidence in the record which disputes said fabrications presented in Appellees' Brief. Only these errors are discussed herein. Pages are identified as Appellant's Brief (AB), Appendix(A), and Board Decision (D).

### **(3) BRIEF FACTUAL BACKGROUND**

2. The invention at issue in this case is a method for monitoring a fuel located within ("loaded") a material, like a sponge fills with water. The method uses a vibration of the material. The invention [Appl. 07/371,937, A160-189] solves the long-standing problem of measuring the loading remotely and non-invasively - features of great utility. Claim 32 claims monitoring the material using at least one vibrational mode (natural frequency). The original disclosure taught the preferred embodiment, the vibrational cathode (A166-A167), monitoring subsystems (A168-A170), viscosity, damping, surface materials (A169), and coupling to a large mass. The equations of motion conform to known physics (A170-A173).

3. The claims of the present case are on pages A184. Proposed claims with the minor changes that the Examiner recommended pursuant to MPEP 707.07(j) and MPEP 706.03(d), but did not enter, are on pages A187-A190. The Board has presented nothing which differs or rebuts the teachings of the original specification and claims, the Declarations (A18,A44,A166-167,A18,A44), exhibits (A62-A80,A91,A109), or the fact that only two (2) sentences in the entire Decision (28 pages, A132-A159) pertain to the present invention.

#### **(4) ERRORS OF FACT**

##### **Appellee's Errors About The Invention**

4. Appellee's falsely state:

*"Swartz's claims require cold fusion"*

*"the monitoring of the vibrations of the material must occur during the cold fusion process"*

##### **The Truth - Vibration Is Not "Fusion"**

The case must read upon the original specification and claims: Instead, Appellee's Brief continues a deliberate inaccurate misreading of the claims, with substitution of the word "fusion" instead of "loading" and "vibration". "Fusion" cannot be confused with "vibration" or "loading" based on any honest reading of the definitions in any dictionary:

5. Appellee's falsely state:

*"Throughout prosecution, Swartz argued that his claims require cold fusion. For example, Swartz stated that his invention 'could be used to monitor said fusion reaction(s) occurring at either electrode.'"*

##### **The Truth - "Fusion" Is Not Required For The Method To Monitor Vibration**

Fusion is not required for the present invention nor did Appellant claim such. Instead, the method to monitor a material is useful in several fields.

Consistent with this, Nagumo's second sentence, contradicting the first, reveals his lack of truth. Webster's dictionary clarifies this:

**"require" - to demand as necessary or essential**

**"could" - an alternative to *can* suggesting less force or certainty; am able**

6. Appellee's falsely state:

*"...the specification does not give explicit definitions of the three critical terms, "isotopic fuel," "material," or "products from an isotopic fuel,"*

*"The only "material" disclosed in the specification is a palladium electrode"*

### **The Truth - "Isotope", "Fuel", "Material," And "Products" Are Well-Understood**

The words "material", "isotope", and "fuel" were defined. The fuel is hydrogen in one of its two isotopic forms, and the material is palladium or nickel. The words are well-known and were fully-discussed in the original specification and the other cited materials. Appellant's several cases before the Board can **"incorporate by reference subject matter disclosed in another patent application which is pending before the Patent Office and hence unavailable to the public"** [In re Jolles].

Furthermore, the Office properly used these words for more than a decade, consistent with Webster's dictionary. Furthermore, Mr. Nagumo argument is contradicted by his second sentence.

7. Appellee's falsely state:

*"...the Board's decision is based on a thorough consideration of the evidence of record"*

*"The Board analyzed four references that Swartz submitted."*

*"he has failed to identify any document that would have made a difference"*

### **The Truth - Board Failed To Consider Declarations**

Appellee's Brief, like the Decision, ignores solid and clearly identified evidence in the record (A8,A12), including Declarations and almost four hundred references, which constitute a *bona fide* case. Said Declarations (A18, A44,A49,A62, A66,A72,A74,A77,A85) rebut false and inaccurate statements by the Office, and most importantly, included facts which demonstrate validation, operability, and utility of the Applicant's claimed subject matter as correctly taught

in the original specification and claims regarding said monitored vibrating electrode. Straus (A44-A48) and Swartz (A18-A43) contained factual statements directly addressing how the specification adequately described the subject matter recited in claim 32, and demonstrated that it operated as stated. They also herald that a person of ordinary skill in the art would have understood the inventor to have been in possession of the claimed invention at the time of filing. They set forth facts that should be admissible at trial.

8. Applicant came forward with this evidence from Declarants and affiants with "ordinary skill-in-the-art" including Rotegard(A75), Swartz(A18,A77), Bass(A62), Fox(A72), and Mallove(A66), Kurzweil(A80), Ahern(A78), and Miles(A79) as required [In re Oetiker], with statements supporting their introduction including full and explicit showing of good and sufficient reasons why they were not presented earlier. The Declarations were received (A12-A17). Some Declarations were "lost", misfiled, or otherwise not entered into the record (A82,A8).

9. Appellant's Declarations had relevant facts by probative witnesses who are authorities in their fields. By contrast, the Board has relied on "science" reporters, workers in fields competing for limited Federal funds, and those trying to sell their books on the the seque subject. The references cited in the Decision have not been sworn in, and are not directed to the present invention.

10. Appellant's declarations demonstrate that the method to monitor a vibrating material was correctly taught at the time Swartz filed his application. The Declarations have been substantively ignored (A8,A81,A91) despite two previous remand Orders requiring a reply to the Straus and Swartz Declarations (A81, A12-A17). Furthermore, Appellee's Brief takes the Declarations out-of-context

(Straus) and simply ignores that Office mislabeled them as "letters" (A1; analyzed A8-A11) and relegated them improperly to "opinion" [Mallove, A66; In re Alton].

### **Board Failed To Consider Evidence**

11. Appellee's falsely state:

*"most of the numerous technical references he supplied were published after his filing date."*

*"Swartz objects repeatedly to the alleged failure of the Board to consider certain documents, all of which were filed after the notice of appeal to the Board, and none of which had been before the examiner."*

### **The Truth - Publications Confirmed Teachings Were Correct**

Applicant supplied Exhibits, listed on appropriate forms, on September 27, 1991, June 1, 1992, March 1992, February 10, 1994, and April 24, 1994. The exhibits were used as evidence of the state-of-art which existed as of the filing date. They also rebut false statements by the Office (later Board). The post-filing references establish that, as of the filing date, one of skill-in-the-art could use a method to monitor a vibrating electrode without undue experimentation. Vibrational modes of a material are not "incredible" (A144) but can be elicited when using the teaching of the original specification and claims. Vibrations are not unproven "theory" (A153) as the Decision purports, but those skilled-in-the-art describe them out as a function of frequency and time. Said Exhibits reached the Office (A8-A11). Some were misplaced -and all substantively ignored (A1-A11; A109-A117) because they rebut all of Appellee's statements (A109) [In re Gazave; In re Chilowsky; In re Jolles].

12. Appellee's falsely state:

*"All claims on appeal are indefinite."*

### **The Truth - Claims Were Provided By The Examiner And Are Definite**

Mr. Nagumo is not fully truthful because the Board failed to address this issue under Appeal (A85-A90, A124-131) and because the claims were suggested by

the Examiner pursuant to execution of MPEP 707.07(j) and MPEP 706.03(d) following a duly-served request [an issue pursuant 1.192e(6)(v), ignored by the Board].

Appellant gave substantive arguments for entry including specific and substantial arguments against the rejection. It is unfair for the Office to deny entry of Amendments (A187) suggested by the Examiner, when said amendments added neither new matter nor issues, and could not have been offered before the receipt of suggestions pursuant to MPEP 707.07(j) and 706.03(d), and which responded to, and adopted, each suggestion offered by the Examiner (A85-A90, A124-131, also A83-A84). As Dr. Valone has stated,

**"the suggestion of the examiner to add language ... in order to overcome the rejection under 35 USC 112 second paragraph and then following with a refusal to enter the exact language suggested ... amounts to not dealing honestly with the appellant and not the type of behavior that is normally endorsed by the Patent Office"**

13. It is outrageous and egregious to deny Appellant equal protection for good-faith execution of MPEP 707.07(j) and MPEP 706.03(d).

14. Appellee's falsely state:

*"Swartz filed a second appeal brief on November 28, 1992...The examiner ... maintained the rejection"*

### **The Truth - Appellant Did Respond**

Mr. Nagumo is incorrect. A second "first" Appeal Brief was filed November 28, 1992, to correct a minor disputed typographical issue (A124-131). Applicant filed a Supplementary Appeal Brief on January 21, 1993 (A85-A90) correcting errors of the Office. Applicant filed a Supplemental Appeal Brief on September 30, 1993. A Reply Brief was filed on February 10, 1994. A Second Reply Brief was filed March 24, 1994. A Third Reply Brief was filed on October 13, 1998. These demonstrated how the original specification and claims were in full



compliance with 35U.S.C. §112 and §101 but none of these Briefs, or any substantively, are addressed.

The Appellee's Brief ignore that forty-three (43) pleadings, Declarations, and letters sent by the Appellant were not recorded, and Declarations have been incorrectly listed as "letters". It also ignores that six (6) pleadings of, or communications by, the Office were not sent to the Appellant. No explanation is given for the eighteen (18) Office's entries out-of-order temporally, indicating that the purported "Docket" was not made contemporaneously [Appendix A1-A7 (corrected A8-A11, proof A12-A17)] and in defiance of the Office's date stamps (A12) and in violation of 18U.S.C. 2071. The Court must uphold federal law regarding honesty and integrity of records, hold Appellee's accountable for the inaccurate and non-contemporaneous records and capricious behavior.

15. Appellee's falsely state:

*"The examiner refused entry of the amendments, ...because the amendments raised new issues, and the issue of new matter"*

### **The Truth -There Were No New Issues**

The Office unfairly denied entry of minor amendments suggested by the Examiner, even though they were minor and added neither new matter nor issues, and -- most importantly -- could not have been offered before the receipt of said suggestions pursuant to MPEP 707.07(j) and 706.03(d) [A124-A131].

Most importantly, it is false for the Office to state "deuterons" (an isotope of hydrogen) is new material when the entire original specification and claims involved deuterons and deuterium loaded into palladium in the preferred embodiment.

The suggestion of the examiner to add language to the claims in order to overcome the rejection under 35 USC 112 second paragraph and then following with a refusal to enter the exact language suggested because of a "new matter" or "new issue" accusation amounts to not dealing honestly with the appellant. Nor is

it the type of behavior that is normally endorsed by the Patent Office, consistent with the US Constitution, or complying with the "help our customers to get patents" motto of the Office.

16. Appellee's falsely state:

*"Swartz did not argue the rejections of claims 32-43 separately"*

### **The Truth - Claims Were Argued Separately**

Applicant stated that all claims do not stand or fall together with claim 32 (A119-A123). Applicant not only discussed the content of the dependent claims, he also argued their merits separately from those of independent claim 32. [In re Kaslow].

### **APPELLEE'S ERRORS ABOUT THE OTHER ART**

17. Appellee's falsely state:

*"no references that satisfactorily rebut Lewis, Albagli, Ewing, Cooke, or Huizenga"*

*"... have failed to verify or reproduce cold fusion ::"*

### **The Truth - Although Not Relevant To A Method Of Monitoring, Cold Fusion Exists**

Appellee's arguments about cold fusion and "excess heat" (D12-26) remain irrelevant and immaterial because claim 32 is not about cold fusion, nuclear fusion, or "excess heat." Appellee rejects the present invention by misreading a monitored vibrating electrode for "cold fusion" and "excess heat". These arguments are, as Dr. Valone has stated,

**"an effort at obfuscation based on the prevailing Patent Office management attitude toward any reference to 'cold fusion.'"**

The specification of the present invention -a method to monitor a vibrating electrode - presented specific direction and guidance how to achieve the claimed results with relevant disclosures as to the claimed results. Rather than respond,

Appellee's Brief continues total reference to other art (FP). This is a deception with the Appellee's counsel arguing a different invention and different issue solely cut of a cloth not composed of the present specification and claims. Appellee's arguments are the segue to gratuitous criticism against Applicant - based upon the work and activities of others, specifically Dr. Fleischmann and Pons (FP). However, Applicant cited FP because their electrode, and the present invention, use palladium, and because Applicant thought that it was appropriate to cite all prior art.

18. Furthermore, Appellees irrelevant and immaterial comments are not accurate. Lewis, Albagli, Ewing, Cooke, and Huizenga have been totally rebutted [*vide infra*]. Specifically, the Declarations and Exhibits concerning the scientific field of low energy nuclear reactions are ignored including the reports Appellant submitted from DARPA, SRI, US Navy [China Lake, CA, and elsewhere], Los Alamos, U.S. Electric Power Research Institute, NASA, and the French Atomic Energy Agency and even the Board's own witnesses (A57-A61, A109-A117). Sixty seven references, 140 pounds of submitted materials (A118, A109) exceed by any test the amount of evidence required for proof of utility [In re Gazave; In re Chilowsky; In re Jolles].

The Harwell experiment (Cooke) cited did have excess heat, several times, and ONLY in the  $D_2O$  cell which was in electrical series with the  $H_2O$  cell which had NO such heat bursts [M. Melieh, W.N. Hansen, "Some Lessons from 3 Years of Electrochemical Calorimetry", Proceedings of the "Fourth International Conference on Cold Fusion" Maui, sponsored by EPRI and the Office of Naval Research, December (1993). Instead of actually following up on the literature, with Appellee's Brief there is NO discussion of why the data showed excess heat bursts ONLY in the  $D_2O$  cell which was in electrical series with the  $H_2O$  cell (and

which showed no excess heat bursts), thereby confirming the Fleischmann Pons effect.

Appellee's Brief ignores nuclear emission and product data have been found consistent with a nuclear origin. Low energy xrays, detected by Dr. S. Szpak (USN), can be seen at

<http://world.std.com/~mica/ef61.gif> (lower right).

Other nuclear reaction signatures can be seen at

<http://world.std.com/~mica/ef43.gif> (lower right),

<http://world.std.com/~mica/ef53.gif> (lower right), and

<http://world.std.com/~mica/ef52.gif> (lower right).

Appellee's Brief ignores that Dr. Miles [USN] has challenged critics of this field to rebut the USNavy data.

**"I challenge the critics to find any errors in the report of anomalous radiation by Szpak, Mosier-Boss and Smith in Physics Letters A, 1996, Vol.210, pp. 382-390. .... The measurements of helium were performed at three different laboratories that certainly knew how to distinguish helium from deuterium. In fact, each laboratory separated the deuterium from the helium prior to the gas entering the mass spectrometer. How does any critic propose to explain the fact that 30 out of 33 of our heat and helium studies yielded either excess helium when excess power was measured or no excess helium when no excess power was present. The probability of obtaining this result by random errors is about one in a million."**

[Dr. Melvin H. Miles, 15 Dec 1998]

19. Appellee's Brief ignores the evidence in the record and the Office's own sterling witnesses [Drs. Rehn (US Navy) and Will]. So serious was Dr. Will's

comment, and his tritium contribution [*J. Electroanal. Chem.*, 360 (1993), 161-176], that his final report stated

**"Over 100 groups from more than 12 countries have now reported on various types of evidence for the occurrence of nuclear reactions in deuterium-loaded metals or compounds. This includes evidence for excess heat, tritium, neutrons, x-rays or gamma rays, helium or charged particles."**

[F. Will; Final Report National Cold Fusion Inst.(1991)],

Regarding the three volume contribution (of thickness 5 centimeters) which was edited by Dr. Will, and demeaned by Mr. Nagumo who falsely claimed:

*"Will, (SA102-132), is not a scientific evaluation of cold fusion because it lacks the details necessary for appropriate review by the scientific community";*

the PTO must admit that details have been given, and that progress in this field, cited by Appellee's own witnesses (Drs. Will and Rehn) [In re Ferens, In re Oberwener], continues.

As to the issue of "reproducibility", Appellees remain also incorrect. Meteorology, the studies of earthquakes and medicine and other fields have technologies and sciences but they are not totally (if at all) reproducible.

These exhibits and facts demonstrate the Board is wrong and absolutely and substantively rebut the Decision regarding this less relevant matter. Furthermore, Appellant has taught why said reactions are difficult to achieve == due to inadequate loading (A18, AB-Figure 2) and failure to match input power levels (AB-Figure 3).

Therefore, the method of monitoring --as taught in the original specification and claims-- is of great utility. Nothing the Board has presented differs or rebuts either this fact or anything else in the original specification and claims (A99-A104).

20. Appellee's falsely state:

*"Phase II was considerably more sophisticated,...with calorimetric sensitivities as much as ten million ( $10^7$ ) higher than Fleischmann and Pons."*

*"neither Swartz '92 nor Noninski presents any data, let alone independent data of quality comparable to that of Albagli, to validate their criticisms."*

### **The Truth - The Calorimetric Sensitivity Was Less**

In fact, there were many rebuttals. The strongest evidence against PFC Phase-II is the original data of Albagli *et alia* (Figure 1). Also, heralding the disingenuousness of these statements, Appellees state, *"(Swartz and Noninski) provide alternative analyses of data presented by Albagli, who showed cold fusion does not work."*

21. This is the one of the few places in Appellee's Brief that there is any quantitation, yet it is wrong by a factor of more than ten million. Despite Mr. Nagumo's false statement to the Court, in the May 1992 PFC Appendix, the PFC claimed its "systematic" errors were 100 to 400 milliwatts [implying an insensitivity of  $\geq 30$  kilojoules]. For comparison, the claimed power (excess heat) for cold fusion was in the range of 40 milliwatts (mW).

To influence the Court, Mr. Nagumo willingly, knowingly, and odiously lies to the Court purporting that the PFC sensitivity was nanowatts, yet in fact, the PFC-II sensitivity, admitted by the PFC, was less than most skilled-in-the-art in calorimetry and was less than Dr. Fleischmann and Pons. Mr. Nagumo knowingly

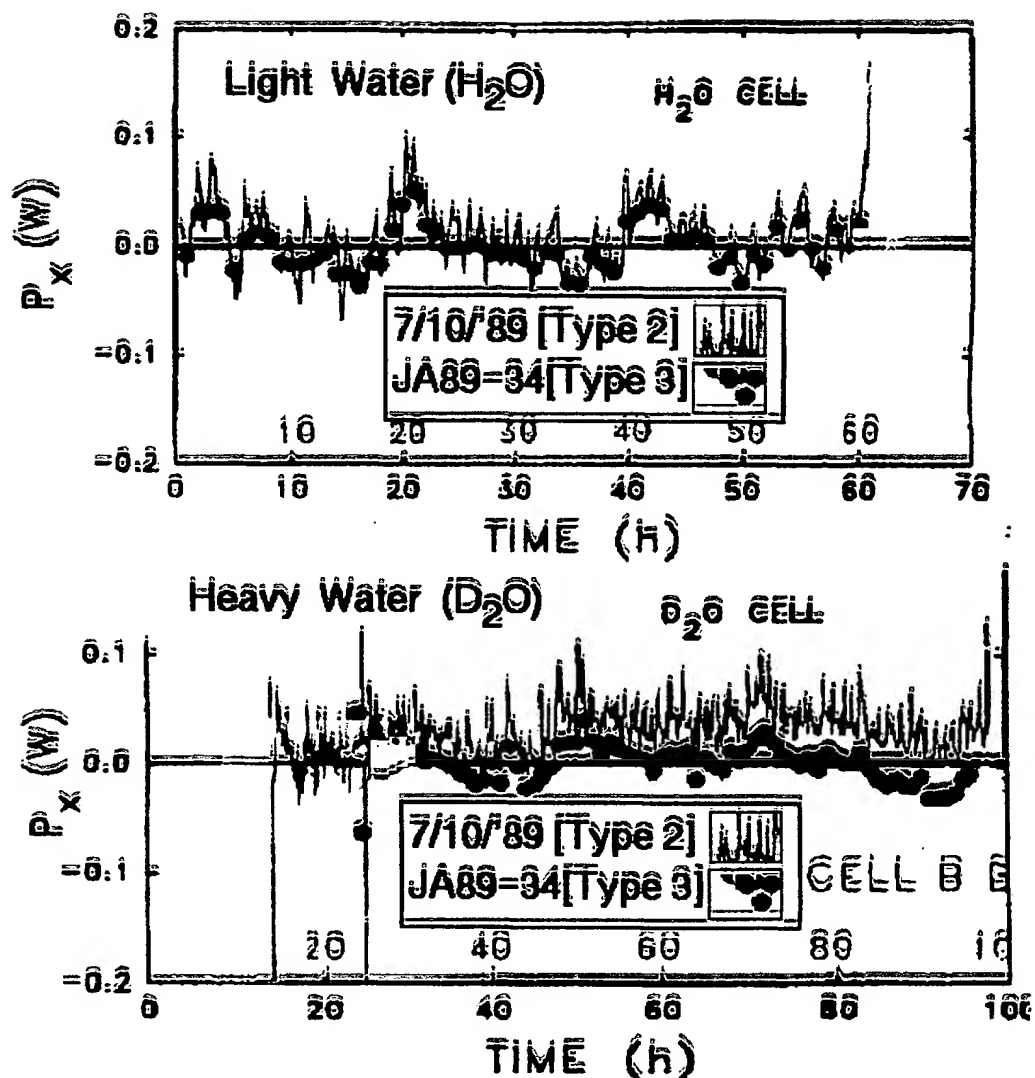


Figure 1 - These are matched sets of superimposed excess heat curves taken from the July 10, and 13, 1989 data of the MIT PFC Phase-II experiment [Albagli et al. (1989, 1990)] for light water (H<sub>2</sub>O) and heavy water (D<sub>2</sub>O). The upper two curves are the light water data (the control). The pair of curves below are for heavy water ("cell B").

For each paired set, shown are the actual original July 10, 1989 data (continuous thinner original curves in black) and the July 13<sup>th</sup> prepublication "averaged" data (blue dots; July 13, 1989 PFC Report JA-89-34).

and quantitatively misleads the Court here because the "*calorimetric sensitivities* (sic)" were not "*as much as ten million ( $10^7$ ) higher than Fleischmann and Pons*", as Nagumo boasts, but were admitted by the PFC to be inadequate to have measured the expected signal ["too-insensitive-to-confirm"].

22. Attention is now directed to the fact that Mr. Nagumo cites known-fraudulent data. These materials have been in the hands of the Board and himself. Therefore, this is important at least three ways. First, the light water curve was published by the PFC essentially intact after a first baseline shift, whereas the heavy water curve was shifted twice, even though the cells were matched, and solvent loss would be expected to be greater for  $H_2O$ . What constitutes "data reduction" is sometimes but not always open to scientific or judicial debate.

The application of a low pass filter to an electrical signal or the cutting in half of a hologram properly constitute "data reduction", but the asymmetric shifting of one curve is probably not. The removal of the entire steady state signal is also not classical "data reduction." The paper should have clarified all "data" points and the methodology used and should have been more faithful to what was observed. Curve proliferation, volatile points, asymmetric curve shifts, and an impaired methodology have needlessly degraded the sensitivity, and believability, of the Phase-II calorimetry experiment to those that examine the data.

23. Second, the Phase-II methodology appears to have been flawed because it masks any constant [steady-state] excess enthalpy. When the original data is examined, the mean power excess was in the range of  $\sim 15$ -64 milliwatts, qualitatively similar to the value which had been expected for a "successful" experiment. The time of turn-on of excess heat is also close to what was the expected time.



24. Third, much current skepticism of the cold fusion phenomenon has been created by the PFC-II's report of "failure-to-reproduce", but it's later claim that it was "too-insensitive-to-confirm" should have been taken with similar seriousness. The flawed experiments, and the Patent Office's eternal, odious, and utter reliance on the altered curves is most dispicable because it was shown to the Office to be fraud years ago.

#### **(7) ERRORS OF OMISSION**

25. Appellees' Brief simply ignores the important matters listed at the top of Table 1 and substitutes the irrelevant matters listed at the bottom. Only by misreading the claims (Table 1, Table 2) describing 'a method to monitor a vibrating material' and by ignoring experimental evidence and inaccurately attacking other's art, does Appellee make the improper, illogical, and inaccurate, misstatement that the utility of this invention is "incredible" or that it purportedly requires 'cold fusion'.

**TABLE 1 - APPELLEES ERRORS OF OMISSION**  
**United States Court Of Appeals For The Federal Circuit**

00 - 1107

Appellees' Brief ignores:

<input checked="" type="checkbox"/>	The words "excess heat" do not even appear in the original specification or claims.	
<input checked="" type="checkbox"/>	Declarations have been lost, ignored, and listed as "letters" (A1-A11):	
<input checked="" type="checkbox"/>	The Board directed the Examiner to answer the Declarations (A81) pursuant to MPEP §1211.	
<input checked="" type="checkbox"/>	Documents were not recorded on the official docket, which the office's date stamp indelibly proves that the office had received [violation of 18 U.S.C. 2071]	
<input checked="" type="checkbox"/>	Fourty-three (43) of Appellant's pleadings/Declarations were not recorded (A82):	
<input checked="" type="checkbox"/>	Six (6) pleadings of the Office were <u>not</u> sent to the Appellant	
<input checked="" type="checkbox"/>	Eighteen (18) of the Office's entries are out of order temporally, non-contemporaneous "docket" [Appendix A1-A7 (corrected A8-A11, proof A12-A17)]	
<input checked="" type="checkbox"/>	Energy is a major financial sector of the US economy, with great utility for energy-related inventions	
<input checked="" type="checkbox"/>	Dr. Ahern has supplied A79, but is ignored, as were Patterson and Ahern patents	

**TABLE 2 -**  
**APPELLEE'S RATE OF WORD USE IN APPELLEE'S BRIEF**  
**United States Court Of Appeals For The Federal Circuit**  
00 - 1107

<b>Word(s) Relevant to This Appeal</b>	<b>Number of times in Appellee's Brief</b>	<b>Relevance</b>
spectrum	0	Method of Monitoring a Mode of Vibration
loading	4	Reason for Method of Monitoring
fast fourier transform	0	Method of Monitoring Modes of Vibration
Patterson	0	Received cold fusion Patent from Appellee
Ahern	0	Received cold fusion Patent from Appellee
US Navy	0	Laboratory Confirmed Cold fusion.
conference	2	International Meetings, with scientists publishing 4000 papers.
Constitution	0	Authority of Congress to Create Patent Office
docket	0	Appellee's has been chaotic, with errors; all simply ignored
<b>Word(s) Much Relevant</b>		
cold fusion	108	Seque to Attack on Appellant. Not in Claims or required for invention.
excess heat	10	Not even mentioned in the Application.
neutrons	6	Irrelevant to invention; used in Seque Attack.
tritium	6	Irrelevant to invention; used in Seque Attack.

## **(8) ERRORS OF LAW**

26. Appellees have violated their own regulations, law, and the US Constitution to deny Appellant a patent.

### **The Correct Standard Of Review**

27. This Court has jurisdiction over the subject matter for any of the following reasons. Appellant clearly exhausted his administrative remedies before filing this civil action.

First, Article III provides that the "judicial power" shall extend to cases "arising under this Constitution (and) the Laws of the United States". Because Appellees have acted under color of Federal law [Osborn v. Bank of United States], then as Marshall has indicated, the mere possibility that a question of federal law might arise is sufficient to satisfy the "arising under" jurisdictional authorization of Article III.

Second, the Decision --and Appellees Brief-- rejects the reasoning of Article I, Section 2 that Appellant is entitled to the privileges and immunities of citizens in the other states. Appellant cited both Ahern 5,411,654) and Patterson 5036031,5318675, 372688,5036031) who received US patents in cold fusion, but neither were even mentioned in Appellees Brief. This confirms Appellee's unlawful dual-tiered system, rather than a single uniform approach consistent with United States v. Nixon (1974) that all are "equal under the law".

Third, the Decision rejects the reasoning of Article VI which prohibits actions that interfere with the Constitution or laws passed by Congress, which in this case includes Article 1.

Fourth, the elimination of an entire field is an anathema to Clause 8 of Section 8, Article I.

Fifth, this Court also has jurisdiction over Appellant's complaint because it involves civil rights violations. The PTO has granted patents in this field (e.g. Ahern, Patterson), just as they are granted around the world - but denied here

because of a correct and proper historical citation by Appellant. Therefore, the Decision is selective discrimination, rejecting the reasoning of the Supreme Court's decision in United States v. Nixon (1974) that all are "equal under the law". Appellant asserts [Gamez v. Toledo] violations of civil rights under either 42 U.S.C. §1983 or Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics for usurpation of civil rights to obtain a patent which is a violation of the 14th Amendment's "equal protection" clause [US Code Annotated, Frontiero v. Richardson; Weiss v. Weiss] and denial of due process and right to an impartial tribunal [28 U.S. Code Section 144, Mayberry v. Penna.; Duncan v. Louisiana].

### **Patent Has Operability And Utility**

28. The Board committed reversible error in holding that the claims lack utility and operability. Any of the following several reasons are sufficient why said rejections under 35 U.S.C. 101 and 35 U.S.C. 112 should be overturned:

First, the rejection under 35 U.S.C. 102 of claims 32 and 35-41 over Johnson (D8) could not have been made and sustained through a final rejection, had the invention truly been inoperative and lacking utility. It is well-known to those skilled in patent examining that no prior patented art can be found for something that clearly does not operate and has no utility. The fact that claim 32 was found by the examiner to be anticipated by Johnson (AB26) shows that the invention must have made at least one credible assertion of specific utility to satisfy 35USC 101 and 35USC 112 (MPEP 2107.01).

29. Second, it is important to note that "where an applicant has set forth a specific utility, courts have been reluctant to uphold a rejection under 35 U.S.C. 101 solely on the basis that the applicant's opinion as to the nature of the specific utility was inaccurate" (MPEP 2107I) and "practical considerations require the

Office to rely on the inventor's understanding of his or her invention in determining whether and in what regard an invention is believed to be 'useful' (MPEP 2107I). In both instances, the Board has disregarded the specific utility and the inventor's understanding of his invention.

30. Third, the Decision has a logical *non sequitor* when it starts the discussion of the rejections under 35 U.S.C. 101 and 35 U.S.C. 112, first paragraph with the word "incredible" on the first page (D12) of a fourteen-page discourse on utility. It is noted that "Office personnel should be careful not to label certain types of inventions as 'incredible' or 'speculative' as such labels do not provide the correct focus for the evaluation of an assertion of utility. 'Incredible utility' is a conclusion, not a starting point for analysis under 35 U.S.C. 101 (MPEP 2107.01, I.B).

31. Fourth, on the first page of the discussion of the rejections (D12) is the reference to Newman v. Quigg which relates to a perpetual motion machine. Claim 32 is a method for monitoring a material that has nothing to do with perpetual motion.

32. Fifth, the Decision does not accurately discuss the invention as it was actually taught in the original specification and claims. Claim 32 claims a method for monitoring, with three method steps (mechanically coupling, exciting said vibration, and following the frequency) that can be easily understood to persons with normal engineering skill in any art. It is a method to monitor a vibrating material loaded with a fuel == such as hydrogen. Instead, the Board points to other art cut of a cloth not even made from the original specification and claims, even though the claimed invention should be the focus of the utility requirement (MPEP 2107.01, I.).

33. Sixth, claim 32 must be given the broadest reasonable interpretation, and this interpretation **must** be consistent with that which one who is skilled-in-the-art would reach [In re Morris] "claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art; "Reading a claim in light of the specification, to thereby interpret limitations explicitly recited in the claim, is a quite different thing from 'reading the limitations of the specification into a claim,' to thereby narrow the scope of the claim by implicitly adding disclosed limitations which have no express basis in the claim" [In re Prater]; see also M.P.E.P. §2111.01 ("[T]he words of a claim ... must be read as they would be interpreted by those of ordinary skill in the art:").

Monitoring is understood and is an important matter to one skilled-in-the-art. Claim 32 demonstrates enablement (a question of law [In re Fouche]) about a method to monitor a vibrating loaded material and has utility as a method for monitoring when a broader interpretation is given to it.

34. Seventh, the written description and Declarations have been given and the Board's burden is only discharged by "presenting evidence or reasons why persons skilled-in-the-art would not recognize in the disclosure a description of the invention defined by the claims" [Wertheim, 541 F.2d at 263, 191 USPQ at 97]. That was NOT done in this case by the Office or Board. Appellees have failed to supply one substantive reason why one of ordinary skill in the art would not consider the description sufficient. Their legal conclusion is without substantive underlying factual inquiries [Johns Hopkins Univ. v. Cellpro, Inc.]. Thus, the Board failed to present a *prima facie* case of unpatentability [In re Otiker].

35. Eighth, dual rejection is wrong because "[t]he how to use prong of ¶112 incorporates as a matter of law the requirement of 35U.S.C. §101 that the specification disclose as a matter of fact a practical utility for the invention." [In re

Ziegler]. The Board's opinion has only been made by not reading on the claims of this patent regarding a monitored vibrating electrode, and by either dismissing the Declarations as opinion or ignoring them altogether. Furthermore, the Board cannot make this type of rejection, unless it has reason to doubt the objective truth of the written statements [In re Brana]. Appellant provided substantive rebuttal evidence [In re Marzocchi]. The Declarations (A18,A44,A49,A62,A66,A72,A74,A77,A85) declare, those skilled-in-the-art have testified (A75,A78-A80), and the published papers (A109, A91) demonstrate, that the rejection is wrong. In this case, given the submitted [and received (A12-A17)] Declarations, reason never existed doubting the objective truth of the statements relied on for enabling support [Environtech Corp. v. Al George, Inc.; In re Brana].

36. Ninth, the Board erred by mistaking a question of fact for a question of law under 35U.S.C. §112. The declarations by Swartz, Straus, and others offer factual evidence of why one of ordinary skill in the art would have understood the operability and utility of the present invention, but remain ignored regarding their factual content. Furthermore, the Declarations contain factual evidence and the Board is obligated by law to assume that Applicant's Declarants' unrebutted assertions must be taken as true (Lewis v. Bours). Appellant has far exceeded all requirements [Droukas v. Divers Training Academy; Marino v. Hyatt Corporation; Morrill v. Tong; Chelebda v. H.E. Fortuna & Brothers Inc.].

36. Tenth, Appellee's Brief remains void of substantive discussion of said Declarations regarding matters involving fact. The Board erred by dismissing, ignoring, or relegating improperly to "opinion"-status, several declarations without an adequate explanation of how the declarations failed to overcome the *prima facie* case initially established by the Board. Furthermore, of the most important unmentioned Declarations (A18,A44), it still cannot be determined from the record which - if any - of these submitted averments by the Declarants regarding



operability and utility have been formally considered by the Board. The Board should have indicated which, if any, of the averments (or pages) in the Declarations have been formally considered by the Office and, if so, how they reached their conclusion. The Decision has erred by omitting exactly why this evidence in the record regarding operability and utility, and supporting Applicant has not been addressed.

37. Eleventh, patentability is determined on the totality of the record, by a preponderance of the evidence with due consideration to persuasiveness of argument." [Id. at 1445, 24 USPQ2d at 1444]. The Board's own witnesses directly refute and contradict the Board (Drs. Will, Rehn). Nothing the Board has presented differs or rebuts anything in the original specification and claims. Instead, it handwaves to irrelevant art cut of a cloth not even made from the original specification and claims.

38. Twelfth, the Board also erred when they sustained the rejections to both claim 32 and claim 42. Upon reviewing the disclosure of the case (Serial No. 07/371,937) and the Appeal Brief (11/28/92, p. 26), it is clear that the rejection only was applied for lack of antecedent basis of "said material" in claim 42. The use of "said material" in claim 32 has sufficient antecedent basis in the preamble of claim 32. Therefore, the rejection under 35 USC 112 second paragraph does not and should not apply to claim 32 at all.

39. Even if, in the extreme presumption any of the Appellee's arguments are valid, this would still "not per se negate utility" (MPEP 2107.01, II.B). Such a presumption does indeed appear to be asserted by the Board on the second page of the utility discussion (D13, line 17), without any regard to the relevant MPEP guidelines cited here.

40. Even if, in the extreme presumption any of the Appellee's arguments are valid, by a process of elimination, the question of utility (D12-26) regarding claim 32 can logically only refer to the preamble "In a process...is electrochemically loaded," which however, does not carry patentable weight in this claim. To emphasize this fact more clearly, note:

- (1) the preamble of claim 32 recites the purpose of the process;
- (2) the body of the claim does not refer back to the preamble;
- (3) the process steps are able to stand alone (MPEP 2111.02).

Therefore, claim 32 can be asserted to have justifiable utility when the preamble is put in proper perspective.

41. The question of whether a specification provides an adequate written description of the subject matter of the claims is an issue of fact. Applicant's specification taught how to use the invention --a method to monitor a vibrating electrode-- as described in the original specification and claims provided an adequately written description of the invention (a monitored vibrating electrode), including how to operate the invention, so that an artisan or those skilled-in-the-art, could practice it without undue experimentation [In re Wands, In re Vaack] and therefore there is enablement under section 112, ¶1. Applicant has therefore fully complied with the enablement requirement. There is utility and operability of the invention, and reversal of the final rejection of claims 32-43 under 35U.S.C. §112 is fair and reasonable.

42. Utility is a fact question [Raytheon Company V. Roper Corporation], and one which the Court must review for clear error [Cross v. Iizuka; In re Zurko]. The present claimed invention meets at least one stated objective, and therefore utility under §101 is clearly shown [Standard Oil Co. (Indiana) v. Montedison; E.I. du Pont de Nemours & Co. v. Berkley & Co.; Krantz and Croix v. Olin; Chisum on Patents, 4.04[4] [1983]; Raytheon Company v. Roper Corporation]. Declarations

and exhibits demonstrate that claims 32-43 clearly define subject matter of considerable utility, and Applicant has fully conformed with the requirements of §101 of the Patent Act. Reversal of the final rejection of claims 32-43 under 35U.S.C.101 is just and reasonable.

### **Laws Ignored By Appellees**

43. Appellees are defiant of their own rules, and do not dispute Appellant's arguments. Appellee's Brief contains false statements (*vide supra*) in a proceeding wherein said statements have bearing [People v. Pierce] and are made upon Federal documents [Nichols v. Sahagian]. Said false statements, made to confuse the Court, include obfuscation out of cloth not even made from the original specification and claims, and have been made for ulterior purposes and/or wrongful motives [Green v. Elgie], and are in violation of 18 U.S.C. §1001. Appellees' perjury and delay in issuing a patent for a method to monitor a vibration of a material are both an assault on the rule of law, and a barometer to the behavior of the Appellee.

Appellees were notified for not having given credit for cashed checks and of having received timely materials, and the Appellees continue to act in a way defiant of law and their own rules. Systematically losing checks and documents are egregious and are a series of affirmative steps against the Appellant [Lancey v. United States] systematically denying Appellant's right to a patent. These acts are *trespassory, and therefore necessarily* wrongful. [State v. Lewis].

44. Appellees are private citizens acting as officers [U. S. v. Price] and have conspired to deny Appellant's right to an impartial tribunal, and due process of law by frustrating and hindering efforts to continue research in the United States.

## Appellees Ignore Evidence Of A Federal Crime

45. Appellee's Brief cites fraudulent data (PFC-II data sets, hereinafter "fraud") after its inaccuracy was substantively clarified by Declarations rebutted Declarations (A33-A35), six independent analyses (including those of Melich, Noninski (93; 91B), and Mallove), and the groups own experimental data). There has NEVER been argument against the submitted documents, Declarations, either by the Appellee or elsewhere.

46. Eggregiously, Nagumo incorporates reference to altered data in a proceeding [People v. Pierce] where inaccurate and falsified data is improper because it has no basis in either law or fact 18 U.S.C. §1001]. Thus, Appellee's Brief rejects the reasoning of the Supreme Court [Osborn v. Bank of United States]; U.S.v. Price], and several Appeals Courts [Sawtelle v. Farrell; Leaseo Data Processing Equip. Corp. v. Maxwell; Pizarro v. Hotels Concorde Int'l; Peckham v. Continental Casualty Ins. Co.; Donatelli v. National Hockey League].

47. Appellees have used false statements known to be false *a priori* [Nicholf v. Sahagian] satisfying the rigorous requirements of Fed. R. Civ. P. 9(b). This demonstrates breach of duty [Rannard v. Lockheed Aircraft Corp.] and negligence [Newing v. Cheatham], and suggests strong-arm tactics, obstruction of justice, and violations of 18 U.S.C. §1503.

48. Appellee's Brief attempts to demean Appellant's work. In a setting of citing known fraud, this is a corrupt by a public officer under color of office [Perkins and Boyce, 238]. Appellee defames with innuendo and malicious accusations; defamatory *per se* [Megarry v. Norton], and it was foreseeable [Yorty v. Chandler] and with malice [Mullins v. Brande] under color of law [U. S. v. Price] as confirmed by the docket.

49. Appellees use conspiracy to defraud [18U.S.C. §371] which makes this an exceptional case pursuant to 35U.S.C. §284 and §285.

**(9) SUMMARY**

50. The Decision should read on the original specification and claims, and respond to the Declarations (A18,A44,A49,A62,A66,A72, A74,A77,A85) and supporting Exhibits (A109-A117). Instead, it is directed events and the art of others rather than claims 32-43. Appellees have utterly failed to present a meritorious defense, responding instead with errors (*vide supra*) and more irrelevant material.

51. Applicant demonstrated a method to monitor a material loaded with an isotope of hydrogen, using a vibration. The original specification and claims 32-43 have taught the subject matter defined by each of the rejected claims, and have set forth the best mode contemplated, and thus there is compliance with 35U.S.C. §112 regarding operability. The claims distinctly point out and claim the subject matter which constitutes the invention, so there has been compliance with 35U.S.C. §112, second paragraph.

52. It was unfair for the Office to deny entry of Amendments (A187) suggested by the Examiner, when they added neither new matter nor issues, and could not have been offered before the receipt of suggestions pursuant to MPEP 707.07(j) and 706.03(d).

56. Claims 32-43 clearly define subject matter of considerable utility heralding conformity with the requirements of §101 of the Patent Act. Neither the Examiner nor the Decision has produced any evidence to the contrary. Furthermore, Appellee's Brief should be given little or no weight in light of Appellee's misstatements and irrelevant material.

53. There may be inadequacies and a lack of normal attorney eloquence in this Brief, but the Appellant *pro se* is entitled to less stringent standards [U.S. Rep, 404, 520-521 (1972)].

54. This honorable Court should reverse the Decision's affirmation of the Examiner's rejections of claims 32 through 43 which stand rejected under 35U.S.C. §112 and U.S.C. §101 of the Patent Act; and order entry pursuant MPEP 707.07(j) and 706.03(d), and order any other relief as the Court deems just, proper, fair and equitable.

Respectfully submitted,

June 15, 2000



Dr. Mitchell Swartz, Appellant, *pro se*

P.O. Box 81135

Wellesley Hills, MA 02481

**(10) CERTIFICATE OF SERVICE (Rule 25 (D))**

Appellant certifies that he has complied with Rule 25 (d). Appellant mailed two (2) copies of the above first class prepaid to Appellee's counsel, Attorney Mark Nagumo, Associate Solicitor, 2121 Crystal Drive, P.O. Box 15667, Arlington, Virginia, 22215, this June 16, 2000.



Mitchell R. Swartz

**(11) CERTIFICATE OF COMPLIANCE (Rule 32 (A) 7)**

Appellant certifies that he has complied with Rule 32 (A) 7, and that there are 6,948 words in the Reply Brief.



Mitchell R. Swartz

**(12) CERTIFICATE OF MAILING**


To Whom it Does Concern:

Appellant hereby certifies that this Reply Brief (twelve copies as directed), has been deposited with the United States Postal Service by First Class Mail, postage prepaid, in an envelope addressed to

"Clerk, U.S. Court of Appeals for the Federal Circuit

717 Madison Pl., NW

Washington, DC 20439" on the date below:



Thank you: June 16, 2000

**UNITED STATES PATENT AND TRADEMARK OFFICE**  
**Board of Patent Appeals and Interferences**  
**Case 2009-1853**

Inventor : Mitchell R. Swartz

Serial No.: 10/646,143

For:

**APPARATUS TO PRODUCE AND STORE  
ELECTRICAL ENERGY FROM  
HYDROGEN-LOADED MATERIALS**

Grp Art Unit: 3641

Examiner: Palabrica, R.J.

This is a continuation in part of Serial No: 07/ 339,976

Filed: 04/18/1989

**Board of Patent Appeals and Interferences**

Box 1450

Alexandria, VA 22313-1450

FAX 571 273 0052

December 31, 2010

***pro se* REQUEST FOR REHEARING**

1. This is the *pro se* Appellant's single Request for rehearing for good cause, made within two months of the date of the original decision of the Board (Exhibit "A"), pursuant to 37 CFR §41.52.

2. The Board has overlooked and misapprehended part of the record, Evidence, the invention itself, and the history of discrimination by the Examiner against the Appellant. This request for rehearing states with particularity the points misapprehended and overlooked in the Board's decision.

3. The *pro se* Appellant thanks the Board of Patent Appeals for the Decision, and thanks the Commissioner for getting the previously-sequestered revised *pro se* Appeal Brief to the Board of Patent Appeals for the Decision.

4. The *pro se* Appellant apologizes for not being or having a lawyer.

5. The *pro se* Appellant is not "*Ex Parte*". Appellant notes for the record that he has timely responded to the Office and Board every time. The only exception was when the Examiner did not notify the Appellant, robbing the Appellant of due process. Was a pleading not sent to the Appellant this time, too? Appellant notes for the record that the Office has refused to send the Docket to the *pro se* Appellant, who has been unable to obtain it over the Internet at this time. This unlawful practice by the Examiner in the past mirrors his disingenuity and withholding Evidence from the Board under color of law in this matter.

For reasons below, and given the history of "missing" documents in Appellant's cases before the Board of Patent Appeals, a full set of documents is included with this Request. NOTA BENE: Every single document referred to here has already been before the Board of Patent Appeals, but the majority of documents have been withheld, both in the above-entitled case and in a previous case before the Board as will be discussed in detail below. All cases are before the Board, and are relevant to each other, and together they demonstrate the systematic bad behavior on the part of the Examiner against the Appellant (including as Applicant).

### **GRAVAMEN of the Request for Rehearing**

6. The gravamen of this Request is that there are more than 30 points which the Board of Patent Appeals has overlooked and/or misapprehended which will change the Decision. The two most essential points outlined in this substantively documented Request, without demeaning the others, is that the Decision has overlooked and misapprehended the invention itself and that the Board has overlooked or misapprehended elements of the docket which have not been available to the Board for a number of reasons none of which were due to the Appellant, as discussed below. These lacking documents have negatively impacted the Board's Decision. The net result has been an abrogation of due process, with the imposition of a Decision that is composed of false statements quoting and "rubberstamping" disingenuous allegations. It is wrong that the Decision has rubberstamped the Examiner's unsupported notions. Subsequent federal lawsuits, if necessary, will show that the Appellant's invention had operability and utility, supported by Declarations, affidavits, peer-reviewed published scientific articles, federal agency interest, open demonstrations reported in the record, and in several Appeal Briefs before the Board. The Board of Patent Appeals has so far, based upon its Decision of Nov 1, 2010, misapprehended and overlooked these facts.



## **Thirty Important Points Misapprehended or Overlooked by the Board of Patent Appeals**

### **MISAPPREHENSIONS ABOUT THE PRESENT INVENTION**

#### **POINT 1: The Board Has misapprehended The Invention's Utility**

##### **7. The Decision states,**

*"Appellant has chosen to argue the operability of the claimed subject matter in terms of whether the claimed methods produce excess heat in the deuterated metal (e.g., App. Br. 13) and whether the system will convince educators, scientists and students of the importance of hydrogen loaded systems. ... Thus, we find that Appellant's assertion of utility is that the claimed invention produces electricity via cold fusion. Appellant also asserts that the invention has usefulness as a teaching tool. App. Br. 15; Spec. 9. However, the invention's use as an education tool appears to involve either educating students and scientists as to the importance of cold fusion or activities not commensurate with the scope of claim 6 or of its dependent claims 7-13, such as delivering electricity to a load for measurement or educational demonstration. Spec. 9. Accordingly, we do not consider the educational aspect of the invention to be a separate asserted utility of the claimed invention."*

*"Appellant's claim 6 recites '[a] process for producing electricity from a metal loaded with hydrogen ....' The Examiner found that Appellant's invention is directed to the production of excess heat by cold fusion. Ans. 6, 8, 30. Appellant does not appear to dispute this finding, but rather asserts that he has shown that his invention produces excess heat and that he has demonstrated how to reproducibly make cold fusion. App. Br. 13, 17."*

The Decision has overlooked and misapprehended the extent, and the seriousness of, and utility of the present invention, and the fact that Declarants, foremost authorities in their field, have disputed this finding. First, in fact, the *pro se* Appellant, then Applicant, described in the original specification of the patent application, and claimed, several uses of the invention: heat, excess heat, electricity, and for teaching (because of the time-integration, monitoring of errors, and strict controls). The Decision has overlooked these facts.

8. Second, in particular, the Decision indicates that the Board misunderstands that heat is generated, it says so. The Decision falsely purports only "excess heat", but in fact, in the original specification of the above-entitled application, it explicitly states,

**"The present invention does not depend upon excess heat; it generates excess heat in the preferred embodiment, and then utilizes it, when it occurs. This invention is still useful without excess heat, however, in the preferred embodiment it is produced."**

This is confirmed because thereafter in the original specification of the above-entitled application, it explicitly states:

**"The present invention is also applicable to materials which do not exhibit excess heat (observable heat beyond that of a joule thermal control)."**

Therefore, despite what the Decision purports, the *pro se* Appellant was also clear that it was heat that was claimed and heat was the product of utility --- and not only "excess heat". Despite the innuendo of the Decision which "rubberstamps" the false statements of the Examiner, operability and utility of the above-entitled invention is independent of both "cold fusion" and "excess heat". It says so in the original specification, and it is proven in the ignored graphs and words therein. Only by ignoring the precise nature of the original specification (see below) can the Decision make the above statement.

9. Third, it was the Examiner who falsely claimed only "excess heat" was involved, and he has attempted to limit the Appellant by restricting his Claims, sabotaging his efforts. In fact, the Appellant has Appealed that matter, but the Decision does not address that either. As was demonstrated in the record, and noted below, the present invention works and cold fusion is not even necessary.

10. Fourth, in summary, there is utility -- and neither the Examiner nor the Board has given a single substantive reason to show otherwise.

## **POINT 2: The Decision Has overlooked that Federal Agencies Find Utility**

11. The Decision has overlooked and misapprehended the extent of Evidence submitted by the *pro se* Appellant, already introduced into the record --and discussed in this and the other Appeals Briefs which are before the Board of Patent Appeals which shows saliently, absolutely, positively that certain Federal agencies support the field and the Appellant. This overlooked Evidence proves that Office's notions are built on disingenuous statements at variance with the simple fact that the Applicant's theory and data and invention have begun to be accepted by scientists at the US Navy, at both SPAWAR and NRL (Exhibit "K"; Appendix 10), DTRA, the US Army, the DIA (Exhibit "C"; Appendix 2), the American Nuclear Society (Appendices 18-20, 22, 23, 26), and several companies in America, Canada, Israel, England, Scotland, Chile and Japan, and scores of scientists are highly supportive of Applicant's high impedance and Phusor(R) LANR (lattice assisted nuclear) systems which comprise the above-entitled application.

12. These institutions have had no trouble working with Appellant on this subject. In fact, since DTRA, DIA, and other agencies see utility, should it take a deposition in federal court to determine the basis of how the Board could claim this is not also convincing, especially in the light that other cold fusion patents have been granted by

the US Patent Office (See Appendices 82 through 85 for the hard Evidence of the coverup, elicited so far by "discovery"). None of these cited institutions demean the Appellant's work as does the Decision which "rubberstamps" the biased, disingenuous Examiner's comments. This is unfair. Evidence should not be overlooked.

13. And in addition, the *pro se* Applicant cited references in more than a dozen patent applications (several either before the Board, or should be before the Board of Patent Appeals) to overcome the Examiner's systematic bias and recurrent, wrongful disingenuous, scientifically unsupported, notions. These are on the attached CD ROM and are important because they show that previous Declarations were withheld from the Board of Patent Appeals. These references to Evidence include the DIA preport which show that this field has utility. These references to Evidence in the record demonstrate that the Applicant's work has been respected by federal agencies and the US military and corporations, even while he has been cruelly abused by the Examiner. These above-cited references are to Evidence in the record which demonstrate that the Applicant was correct at the time of the above-entitled application as to operability. Attached are copies of what references with their requisite forms were previously sent but ignored.

The Board should ask itself, *"On what basis can the Board honestly claim these efforts are without utility in the face of the articles in Fusion Technology and J. Scientific Exploration"*?

**Table 1 - Published Evidence in the Record Supporting the Applicant**

Appendix 2 ---- Exh.B-LANRpub-LENR\_DIA.pdf  
 Appendix 75 ---- LANRpub-IEon2007Colloquium.pdf  
 Appendix 76 ---- LANRpub-PFCmitpaper4\_full.pdf  
 Appendix 77 ---- LANRpub-ProceedingsICCF14a.pdf  
 Appendix 78 ---- LANRpub-ProceedingsICCF14b.pdf  
 Appendix 11 ---- Exh.L-Swartz-DemoT99.pdf  
 Appendix 12 ---- Exh.M-Swartz-SurveyJSE2010.pdf  
 Appendix 18 ---- 143-1440-Swartz-Codeposition.pdf  
 Appendix 19 ---- 143-1440-Swartz-ConsistencyBiphasic.pdf  
 Appendix 20 ---- 143-1440-Swartz-ControlBYoopANS-001.PDF  
 Appendix 21 ---- 143-1440-Swartz-ImpactD2OonNickel.pdf  
 Appendix 22 ---- 143-1440-Swartz-IsotopFuelLoad.pdf  
 Appendix 23 ---- 143-1440-Swartz-OOP-AuAnodes.pdf  
 Appendix 24 ---- 143-1440-Swartz-PdD2O.pdf  
 Appendix 25 ---- 143-1440-Swartz-Photoirradiation.pdf  
 Appendix 26 ---- 143-1440-Swartz-Quasi-1-Dim Model of Loading.pdf  
 Appendix 86 ---- Swartz-3RH-IE-f2.pdf

Appendix 87 ---- Swartz-AnalysisN3.pdf  
 Appendix 88 ---- Swartz-Anode Plate-2009-ACS-M0.pdf  
 Appendix 89 ---- Swartz-BassRWempiricalsN3.pdf  
 Appendix 90 ---- Swartz-Bremsstrahlung.pdf  
 Appendix 91 ---- Swartz-Calib-ImprovCalc.pdf  
 Appendix 92 ---- Swartz-Calib-ImpZero.pdf  
 Appendix 93 ---- Swartz-Calib-LinearCorrxn.pdf  
 Appendix 94 ---- Swartz-Calib-PositFLoW.pdf  
 Appendix 95 ---- Swartz-Calib-ThermalStratification.pdf  
 Appendix 96 ---- Swartz-Calib-ThermCondCorr.pdf  
 Appendix 97 ---- Swartz-Calib-TimeStratific.pdf  
 Appendix 98 ---- Swartz-CalibHeatBouyantForce.pdf  
 Appendix 99 ---- Swartz-CatastrophActiveMedia.pdf  
 Appendix 100 ---- Swartz-ColloqMIT2009.pdf  
 Appendix 101 ---- Swartz-Dances.pdf  
 Appendix 102 ---- Swartz-DualOhmicControl11-030.pdf  
 Appendix 103 ---- Swartz-ElectricaN3.pdf  
 Appendix 105 ---- Swartz-ExcessPowerN3.pdf  
 Appendix 106 ---- Swartz-FurthConfOOP.pdf  
 Appendix 107 ---- Swartz-GeneralityOOP.PDF  
 Appendix 108 ---- Swartz-HydRedist.pdf  
 Appendix 109 ---- Swartz-ImportanceOOP.PDF  
 Appendix 110 ---- Swartz-LessonsPFC.pdf  
 Appendix 111 ---- Swartz-MarwanEtAl-ReToShanahan-2010.pdf  
 Appendix 112 ---- Swartz-MetamaterialShaped2010.pdf  
 Appendix 113 ---- Swartz-NonthermN3.pdf  
 Appendix 114 ---- Swartz-OOP-AuAnodes.pdf  
 Appendix 115 ---- Swartz-OptimaloptN3.pdf  
 Appendix 116 ---- Swartz-PatSUCC600.pdf  
 Appendix 117 ---- Swartz-Patterns\_of\_Failure.pdf  
 Appendix 118 ---- Swartz-Phusons.pdf  
 Appendix 119 ---- Swartz-PhusorN3.pdf

### **POINT 3: The Decision Overlooks Evidence listed on Forms 1440, and Discussed in the Appeal Brief**

14. The Decision has overlooked Evidence including the Appellant's peer-reviewed, scientific articles, including those published by the American Nuclear Society. The Evidence was listed on Forms 1440 which were submitted (Exhibit "C"; Appendix 3) and then ignored or "lost" as in the past.

Where are the Examiner's substantive responses to the Applicant's timely-submitted publications in peer-reviewed journals with demonstrated operability and utility? Each and every one of these documents has been ignored.

Where are the Examiner's substantive responses to the Applicant's publications in peer-reviewed journals which taught standards and quality control ("Q/C") which are relevant to experimental operability? They are also ignored.

These publications are Evidence ignored precisely because they rebut the Offices' erroneous position about operability and utility.

15. The Decision has overlooked that these publications were discussed in the record and in the Appeal Brief.

Instead of responding, the Decision implicitly condones sequestration of submitted materials including said peer-reviewed published articles of the Appellant by the American Nuclear Society.

Instead of responding, the Decision condones a history of Evidence now removed from the file --- as it was previously from the Board in '937 (See Appendices 42 and 44 for the details). Instead of addressing the factual Evidence, the Decision rubberstamps the Examiner's position which continues to be disingenuous, inaccurate and at variance with the sequestered Evidence in the record.

16. The Decision has overlooked that the Examiner has ignored *In re Oetiker*, 977 F.2d at 1445, 24 USPQ2d at 1444 which requires the Examiner to substantively respond with a prima facie case of unpatentability.

17. The Decision has overlooked how future generations will judge the Board which so far has encouraged the Examiner to ignore important Evidence of record, when the record showed otherwise.

#### **IMPLICATION - AN APPEARANCE OF IMPROPRIETY IN THE DECISION**

18. One implication is that the sequestration of some documents from the file by the Office demonstrates the Examiner's case is weak and the attempts to systematically derail the Applicant by the Office has eliminated due process and substituted discrimination and disingenuous statements. The Decision has overlooked that it is condoning the Board of Patent Appeals in the egregious "rubber-stamping" Decision.

19. Another implication is that the Decision has overlooked that there is the appearance of impropriety in the USPTO from this targetted discrimination, which is in fact confirmed by the SAW Memorandum, and 1989 Directive (Appendices 83 and 84). For the Board to allow this a second time would make each member willingly complicit in this discrimination before the fact, after being informed of sequestration of timely

submitted documents in the above-entitled action and in at least two other cases which were before the Board ('937 and '970; confer Appendices if necessary).

**Table 2 - Evidence in Record Demonstrating the Examiner Sequestered  
Declarations from the Board of Patent Appeals**

Appendix 37 ---- 937-AppealBrief-1992.pdf  
 Appendix 38 ---- 937-Board-Req2Reconsider-1999.pdf  
 Appendix 39 ---- 937-DecisiononAppeal-1999.pdf  
 Appendix 40 ---- 937-fedAppCourt-AppealBrief.pdf  
 Appendix 41 ---- 937-fedAppCourt-Decision.pdf  
 Appendix 42 ---- 937-fedAppCourt-PetRehearing07.pdf  
 Appendix 43 ---- 937-fedAppCourt-ReplyBrief.pdf  
 Appendix 44 ---- 937-PetCertiorari-2001.pdf  
 Appendix 45 ---- 937-PetCertPubVibration-PubFig.pdf  
 Appendix 46 ---- 937-PhotoOFPleadingsFROMpetCERT.pdf  
 Appendix 47 ---- 937-Remand2Examiner-1998.pdf  
 Appendix 48 ---- 937-ReplyBrief07-June2000b.pdf  
 Appendix 49 ---- 937-ReqRecon2Board.pdf

**POINT 4: The Decision Misapprehends that peer-review publications  
(logged on Forms 1440, but ignored) support the Appellant**

20. The Decision states,

*"The Examiner has provided several references demonstrating that the purportedly positive results of cold fusion experiments are not reproducible. See, e.g., Ms. 7-10 (discussing several of the cited references). As such, we determine that the Examiner has established a reasonable basis for questioning the truth of Appellant's stated utility, and, specifically, has shown that one of ordinary skill in the art would reasonably doubt the utility of Appellant's invention."*

*"Before the PTO can reject a patent application for lack of utility, it must have reason to doubt the objective truth of the statements provided in the written description. In re Brana, 51 F.3d 1560, 1566 (Fed. Cir. 1995). "The PTO may establish a reason to doubt an invention's asserted utility when the written description 'suggest[s] an inherently unbelievable undertaking or involve[s] implausible scientific principles.' In re Cortright, 165 F.3d 1353, 1357 (Fed. Cir. 1999) (quoting In re Brana, 51 F.3d 1560, 1566 (Fed. Cir. 1995)) (alterations in original). Once the PTO furnishes evidence that one of ordinary skill in the art would reasonably doubt the asserted utility of the claimed invention, the burden shifts to the applicant to provide evidence sufficient to convince such a skilled individual of the invention's asserted utility. Swartz, 232 F.3d at 864. "*

*"Rather it seems that much of the purported supporting evidence is not in the record and that the Examiner simply has not given as much weight to Appellant's record evidence as Appellant deems appropriate."*

*"Out of an abundance of caution, we have considered Appellant's supporting documents appended to the Appeal Brief and the Reply Brief for this appeal, although it is not clear whether any of these documents was entered into the record prior to the appeal. We, however, decline to further scour the record in search of entered evidence to support Appellant's positions."*

*"Appellant argues that the Examiner has ignored Appellant's supplied data, several hundreds of pounds of exhibits, and declarations, and contends that this "is consistent with a conspiracy against America and the US Constitution." App. Br. 29. It does not appear to us that the Examiner has ignored any evidence in the record. See Ans. 23-24.*

*" Furthermore, in assessing whether one of ordinary skill in the art would reasonably doubt the utility of Appellant's claimed invention, the Examiner need not, as Appellant suggests, respond to and rebut every assertion made in every document referenced by Appellant. Contra, e.g., App. Br. 32 ("Where is the Examiner's Response to any or all of the twelve (12) volumes of the Cold Fusion Times?") We have*

*considered Appellant's remaining arguments offered in the Appeal Brief and the Reply Brief, and find them unpersuasive."*

*"The Examiner rejected the claims under §§ 101 and 112, first paragraph, based on the determination that the claimed invention is inoperative, lacks utility and, thus, is not enabled. Ans. 6-7, 15-16.*

*"6 The Image File Wrappers for the application before us and for its parent application (App! No. 07/339,976) together contain at least 541 items."*

*"We determine that Appellant has not shown error in the Examiner's finding that one of ordinary skill would reasonably doubt the asserted utility of the claimed invention. Accordingly, the burden shifts to Appellant to submit evidence sufficient to convince one of ordinary skill in the art of the invention's utility. Swartz, 232 F.3d at 864."*

## **Examiner Has Deliberately Ignored the Appellant's Peer-Reviewed Publications**

The Board of Patent Appeals has overlooked Evidence in the record attesting to proven operability (Appendices 18 through 26 and others). The Board has misunderstood that the timely-submitted, ignored, peer-reviewed scientific articles have been published. They have not been rebutted, either by the community OR the Examiner. By contrast, the Examiner, the Office, and the Board have given absolutely no foundation for their flawed opinion. Specifically, the Decision has overlooked Evidence including the author's published peer-reviewed scientific articles about Applicant's inventions. These publications [peer-reviewed by scientists of ordinary skill-in-the-art] were listed on Forms 1440 which were again timely submitted. The Decision has egregiously failed to list, discuss, or analyze Applicant's references showing that Applicant's invention was operable, reproducible, and of significant utility. [underlined for emphasis] These include those in "Fusion Technology" of the American Nuclear Society (\*\*\*\*), demonstrate operability and utility [and thus, validation]. The Appellant, then Applicant, has submitted said unrebutted Evidence, accompanied by Forms 1440, ignored by the Board, ignored by the Examiner, and probably not even posted on the Docket. This Evidence was submitted on August 23, 2003, when the Appellant, then the Applicant, Dr. Mitchell Swartz mailed a check in the amount of \$375.00 for work which would never be performed (that is, judging the above-entitled specification as it was actually presented -- and not imagined).

**(\*\*\*) It is the imprimatur of the American Nuclear Society which is why the Examiner has removed these submitted papers, and refused to discuss them, and refused to sign the appropriate forms and release the docket. Additional timely-submitted publications have been cited in affiliated Appeal Briefs (being unfairly sequestered) and should be before the Board of Patent Appeals.**

The check was accompanied by Applicant's Request for continuation-in-part, a Patent Disclosure, including Abstract, Claims, 30 Sheets of drawing, Cited References, and a three page Form 1440. On said Form 1440 which would only be recorded by the US PTO Office stamp but according to the Board of Patent Appeals never put into the Docket, were listed for the Examiner's signature (which would never come, even though required since the fee had been paid). The cited papers were attached. Said cited papers were few in number but relevant because they were peer-reviewed and written by the author about the present invention's subject matter.

21. The published papers include Swartz, M.R. "Survey of the Observed Excess Energy and Emissions In Lattice Assisted Nuclear Reactions", Journal of Scientific Exploration, 23, 4, 419-436 (2009), Swartz, M., "Excess Heat from Low Electrical Conductivity Heavy Water Spiral-Wound Pd/D<sub>2</sub>O/Pt and Pd/D<sub>2</sub>O-PdCl<sub>2</sub>/Pt Devices", Condensed Matter Nuclear Science, Proceedings of ICCF-10, eds. Peter L. Hagelstein, Scott, R. Chubb, World Scientific Publishing, NJ, ISBN 981-256-564-6, Pages 29-44; 45-54, and 213-226 (2006), Swartz, 1998, Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes, Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85 and Swartz(97), and other peer-review papers.

22. In fact, Applicant DID show Evidence that what Applicant did was reproducible. The Applicant submitted the Evidence to be entered into the record. Why? Because the publications submitted by the Applicant show that growing numbers of the scientific community consider the positive results of Appellant's work as being operative and of utility. That includes the American Nuclear Society and the American Chemical Society. The publications submitted by the Applicant would have been sufficient to convince one of ordinary skill in the art of the invention's utility (Swartz, 232 F.3d at 864), but they have not been recorded or addressed.

23. The Appellant discussed this Evidence in the Appeal Brief (Averment 99) and expected it to be discussed, but it was not. In an unbiased venue, such peer-reviewed publications (like the timely submitted Declarations) establish facts. Such Evidence consisting of published peer-reviewed scientific articles which prove Applicant was correct on the filing date of the application, would have already met the bar of enablement [In re Hogan, 559 F.2d 595, 60S, 194 USPQ 527, 537 (CCPA 1977)].



24. In an unbiased process and system, there would have been a substantive response to the FORMs PTO-1440. In this forum, they are hidden, not discussed, and essentially "thrown out". Egregiously, the Decision has ignored that the Applicant presented Evidence of this to the Examiner, confirmed by documents and the stamp of the US Patent Office. Instead, the Appellant has been odiously attacked, impugned, and discriminated against by rubberstamping false statements in the erroneous Decision. Therefore, the Decision is nothing more than a "rubber stamp" of the Examiner's notion which flies in the face of the undisputed, apparently unrecorded, Evidence including unrebutted, long-ignored, detailed, peer-reviewed publications.

### **POINT 5: The Decision Has overlooked Declarations Which Confirm Operability**

25. The Decision has overlooked Evidence including the Declarations which the *pro se* Appellant, and those watching this obstruction by the Office, understandably thought were in the record (\*\*\*\*\*). To bring this to the Board, the Appeal Brief further discussed the testimony and Declarations of Prof. Hagelstein, and the late Dr. Mallove, Mr. Miranda, the published comments by Nobel prize winner Prof. Brian Josephson, a report from the Science Editor of Popular Mechanics (App. "L"), and reports from Wired Magazine and Infinite Energy on Appellant's Colloquia on Cold Fusion at MIT (where apparently some utility is found).

As the Hagelstein Declaration (Exhibit "E"; Appendix 5) states,

**"The scientific results presented by Dr. Mitchell Swartz on his Phusor experiments, in which excess power and total energy is measured, looks very good. His results are competitive in terms of reproducibility and power gain with the best results obtained by other groups around the world. The reproducible en-ergy gains that he has reported are the highest so far reported by any group."**

**"Water heaters that run on electricity from household wall plugs are currently sold to produce hot water in parts of the country where oil delivery and natural gas delivery are unavailable or inconvenient. Electricity in the Boston area costs near \$0.20/kW-hr, which seems very expensive. Swartz's Phusor ex-periments have shown energy gains at least up to 10x. A Phusor-based water heater with an energy gain of 10x would be competitive with existing water heaters. I would buy one if available."**

The Ahern Declaration (Exhibit "F"; Appendix 6) states,

**"I have known Mitchell Swartz since 1991. I would like to express my strong support for the work being conducted by Dr. Mitchell Swartz in the field of isotopic fuel loading of metal lattices and lattice assisted nuclear reactions. I believe his investigations are some of the most thorough and precise yet con-ducted in isotopic loading and lattice assisted nuclear reactions, and that the thermal effects he is observing are real and will ultimately be useful on a large scale."**

As the Hagelstein Declaration states,

**"Swartz demonstrated his Phusor experiment at MIT in connection with ICCF10 in August 2003. Data from this experiment show significant excess heat. Swartz has demonstrated his Phusor experiment in his Weston laboratory, in Weston, MA numerous times for me and for others."**

Dr. McKubre stated:

**"For me, the best heat report, and perhaps the best report at this conference, was that of Mitch Swartz. ... I have not been able to perform the experiments myself, successfully, and I have always felt that the quality of the calorimetric observations in the nickel light water studies has been less than the quality of the calorimetric observations in the palladium-detuerium system. ... Mitch Swartz presented a very clear piece of calorimetric evidence which is certainly going to cause me to reconsider my belief and understanding of the nickel-light water system and its capacity to produce anomalous heat".**

[Dr. Michael McKubre, SRI, Infinite Energy, 4, 20 , pp.34-35, (1998)]

**(\*\*\*\*\*) Over two decades, the Appellant (then Applicant) brought them into this case, and in associated cases re: application SN 09/568,728, application SN 09/573,381, application SN 09/748,691, application SN 09/748,695, and application SN 09/750,765, before the Board because the Affiants each have probative value. In their respective Declarations and Amicus Curiae Briefs, each was shown to be qualified as an expert with respect to the subject matter to which they testified. Said submitted Declarations which include the Amicus Curiae Brief of Hal Fox [5/8/02], Declaration of Hal Fox [5/16/95], Declaration of Hal Fox [8/14/01], Amicus Curiae Brief of Eugene Mallove [5/8/02], Declaration of Eugene Mallove [5/6/94], Declaration of Scott Chubb [8/13/01], Declaration of Mr. Rotegard [5/15/94], Amicus Curiae Brief of Mr. Rotegard [2/21/01], Straus Declaration of [5/22/94], Straus Declaration [November 27, 1992], Amicus Curiae Brief of Drs. Edmund Storms [2/21/01], Amicus Curiae Brief of Talbot Chubb [2/22/01], Amicus Curiae Brief of Thomas Valone [2/24/01]. Said Declarations and Amicus Curiae Briefs relevant to the above-entitled action are hereby again cited, referenced, and incorporated by the *pro se* litigant.**

26. The Decision has overlooked the scope of the unbutted Declarations and statements. The following Declarations confirm this travesty against American citizens by the US Patent Office, and this Examiner.

**Table 3 - Declarations and Affidavits in Record Supporting Appellant**

Appendix 5 ---- Exh.E-143-Affidavit-143-Hagelstein-2010.pdf

Appendix 6 ---- Exh.F-143-Affidavit-143-Ahern-2010.pdf

Appendix 7 ---- Exh.G-Affidavit-Josephson-2004.pdf

Appendix 8 ---- Exh.H-Affidavit-Mallove-FromtheFront-2003.pdf

Appendix 9 ---- Exh.J-Affidavit-Miranda-2003.pdf

Appendix 10 ---- Exh.K-Affidavit-NRLonSwartz-2006.pdf

Appendix 50 ---- Affidavit-143-Hagelstein-2007.pdf

Appendix 51 ---- Affidavit-937-AmCurValone.pdf

Appendix 52 ---- Affidavit-937-Fox-AmicusBrief-2001.pdf

Appendix 53 ---- Affidavit-937-Mallove-AmicusBrief-2000.pdf  
 Appendix 54 ---- Affidavit-937-McKubre-AmicusBrief-2001.pdf  
 Appendix 55 ---- Affidavit-937-Rotegard-AmicusBrief-2001.pdf  
 Appendix 56 ---- Affidavit-937-Storms-AmicusBrief-2001.pdf  
 Appendix 57 ---- Affidavit-937-TalbotChubb-AmicusBrief-2001.pdf  
 Appendix 58 ---- Affidavit-937-Valone-AmicusBrief-2001.pdf  
 Appendix 59 ---- Affidavit-976-Ahern-2008.pdf  
 Appendix 60 ---- Affidavit-976-Bass-1996.pdf  
 Appendix 61 ---- Affidavit-976-Beigel-1993.pdf  
 Appendix 62 ---- Affidavit-976-Fox-1995.pdf  
 Appendix 63 ---- Affidavit-976-Rotegard-1994.pdf  
 Appendix 64 ---- Affidavit-976-Shaw-1996.pdf  
 Appendix 65 ---- Affidavit-Ahern-Letter-1996.pdf  
 Appendix 66 ---- Affidavit-Kurzweil-Letter-1996.pdf  
 Appendix 67 ---- Affidavit-Mallove-1994.pdf  
 Appendix 68 ---- Affidavit-Mallove2Clinton-2000.pdf  
 Appendix 69 ---- Affidavit-Miles-Letter-1996.pdf  
 Appendix 70 ---- Affidavit-Straus-1992.pdf

The Declarations completely address the Examiner's points of rejection and specify detailed rebuttals which prove that the Examiner's statements are absolutely, positively incorrect. The Declarations constitute a *bona fide* case. They are quite convincing and persuasive to one who is open-minded and not biased and free of an agenda (Appendices 82, 83; e.g. SAW Memorandum). The Declarations attest to operability of the Applicant's claimed subject matter, and reveal with testimony that the present invention is operable. They prove that a person of ordinary skill in the art would have understood the inventor to have been in possession of the claimed invention at the time of filing. They contain factual statements directly addressing how the specification adequately described the subject matter recited in the claims and demonstrate that it operates as stated. They also demonstrate that the original specification and claims clearly define subject matter of considerable utility.

#### **IMPLICATION - AN APPEARANCE OF IMPROPRIETY IN THE DECISION**

27 In this case, the invention and its utility are convincing to several of ordinary skill in the art who have stated so at public meetings and the invention meets several stated objectives. Proof of operability and utility should be judged either by those using the invention or those skilled in the art. Validation occurs when scientists actually skilled, and working, in the state-of-the-art state it to be so. These are scientists who research and actually write the current scientific technical papers which undergo peer-review, file patent applications, and attend international conferences. They absolutely disagree with the Examiner on this.

28. The Declarations, with the exception of the Board noting one of Prof. Peter Hagelstein's Declarations (see below), all of the rest have been systematically and substantively ignored despite the fact that the *pro se* Applicant has undertaken the full burden of coming forward with his evidence before the Final, as required [In re Oetiker, 977 F.2d at 1445, 24 USPQ2d at 1444].

29. Only by systematically ignoring the submitted Evidence including unrebutted Declarations, submitted publications (not entered into the record by the Office; and confirmed over and over before the Board by Exhibits (Appendix 3 in the above-entitled case; And Appendices 42 and 44 in case '937), unrebutted arguments, can the Decision affirm the Examiner. Given all of these submitted Declarations, it is clear that the Decision has "rubberstamped" falsehoods, and in doing so has essentially called hundreds of scientists, along with the Appellant, as "liars" without any basis whatsoever. The Decision, without a basis of foundation, has cast doubt on the objective truth of their statements, corroborated and supported by multiple Declarations.

30. The Decision has implicitly impugned all of these people, insulting the abilities to discern and honestly report what they observed. And who are these people? These people include the hundreds of observers who saw Appellant's (then Applicant's) demonstration at MIT. These people include those who heard the Appellant's lectures in DTRA and the US Navy. Appellant's data has led the US government to revisit 'cold fusion', at least the way Appellant has taught it.

31. For the record, attention is again directed to the fact that the Applicant has repeatedly undertaken the full burden of coming forward with his evidence as required [In re Oetiker, 977 F.2d at 1445, 24 USPQ2d at 1444]. By ignoring Evidence and Declarations, the Examiner continues the appearance of impropriety as he ignores In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988).

**\*\*\*\* In the discussion below, reference is also made to previous cited relevant Declarations, letters and affidavits, which are on the attached CD ROM. These are relevant and important because they show that the Applicant was correct at the time of the above-entitled application and as to operability and utility of the present invention.**

## **POINT 6: The Decision Overlooked Appellant's Open Demonstrations**

32. The Decision has overlooked and misapprehended the extent of Evidence submitted by the *pro se* Appellant, already introduced into the record --and discussed in the Reply Brief (Averment 36 in the Reply Brief) and in the other Appeals Briefs-- that the present invention has been demonstrated at multiple locations, in front of many scientists (Appendices 5, 7-9, 11). Their names were given to the Examiner with the results of each run. They have put the information on the Internet. They have written Declarations. They are ignored. This submitted Evidence, including Declarations, has been apparently ignored again.

Evidence in the record attached to the original specification includes extensive data, sterling data with time integration and full controls. The Decision has overlooked additional Evidence including submitted information including testimony and data regarding Applicant's open demonstration at MIT and before many witnesses. Said Evidence of Appellant's open demonstrations included several pictures' urls supplied in the Appeal Briefs, but which remain on the Internet at <http://www.std.com/~mica/jeticcf10demo.html> and <http://www.lenr-canr.org/Collections/ICCF10.htm>

**"Dr. Mitchell Swartz's Fleischmann/Pons-type electrolytic palladium Phusor/low electrolyte conductance heavy water/platinum cell performed flawlessly in Prof. Hagelstein's lab at MIT during ICCF10. Its excess power ranged from 167% to 267% as Dr. Swartz altered the experimental conditions."**  
[Dr. Eugene Mallove, Infinite Energy Magazine 9/2003]

**"Greetings. I am back from ICCF-10 ... Swartz, and Dash et al., live demonstrations at MIT. Marvelous work! Bravo to everyone! McKubre said he would never have the guts to try this, because so much can go wrong when you move an experiment."**  
[Jed Rothwell, Subject: Impressions of ICCF-10, 3 Sep 2003]

**"Three excess heat experiments were shown in live demonstrations at ICCF10, including two on August 26, in a laboratory at MIT that was open to the public: A cell in a precision calorimeter was shown by Mitchell Swartz and Gayle Verner at MIT."**  
[<http://lenr-canr.org/iccf10/iccf10.htm>]

And yet as another example:

**"La dixième conférence internationale sur la fusion froide ICCF10 s'est tenue à Boston aux Etats-Unis, du 24 au 29 août 2003. 120 personnes de 15 nationalités différentes y ont participé. Elle était organisée par le Professeur Peter Hagelstein, du MIT. ... "Deux démonstrations de fusion froide ont été présentées : l'une par le professeur John Dash de l'université de l'Oregon à Portland, et l'autre par le Dr Mitchell Swartz. Les deux expériences ont démontré la production d'excès de chaleur. ... M. Swartz a obtenu de forts excès de chaleur, jusqu'à 300% avec de l'eau lourde ultra pure de résistivité 220 k $\Omega$ , sans rajout d'électrolyte, avec cathode de palladium hélicoïdale. "**

[Rapport sur L'International Conference on Cold Fusion ICCF10]

These public demonstrations are important because they constitute additional significant and reputable evidence of record to support that the invention DOES operate as indicated.

33. The Decision ignores substantial Evidence including of Applicant's open demonstrations at MIT to which the Examiner was invited but did not come (\*\*). Specifically, the Decision has misunderstood that Applicant gave a demonstration of the Applicant's [now Appellant's] invention, openly to the public, at the Massachusetts Institute of Technology [Cambridge, MA]. The public display at MIT was for a week before hundreds of people, reported worldwide with affidavits submitted as Exhibits to the Board. Observations of the Applicant's invention have been reported on in countries such as America, France, Japan, and China from where scientific witnesses came. Some were discussed and cited in the Appeal Brief, some were listed as Exhibits with the Appeal Brief, and others are on the Internet. All have been meticulously ignored in the Decision with the appearance of impropriety.

**(\*\*\*) Attention is directed to two simple facts. Dr. Palabrica and the Patent Office's counsel were personally invited to attend the MIT ICCF10 meeting and demonstration, but he chose not to attend for reasons unclear. They were both also personally invited (along with the Commissioner) to attend the meeting and demonstration at MIT in 2003 and to the International Conferences in Washington DC in 2008, but chose NOT to attend. The DC meeting was conveniently (and expensively) placed nexted to the US Capitol to facilitate the Examiner's coming.**

34. The Decision states,

*"Furthermore the "declaration" is primarily directed to explaining why those who doubt the operability of cold fusion/excess heat are incorrect, and offers little or no specific opinion or facts directed to whether Appellant's claimed invention is operable and reproducible. "*

There are several problems with this statement in the Decision. First, the Decision has taken only one of the Declarations, and when there were other Declarations. The Declaration of Prof. Peter Hagelstein cited by the Board was given because the

Examiner's Answer disingenuously cited MIT Prof. Peter Hagelstein with respect to the DOE, and then attempted to impugn Prof. Hagelstein's theoretical work.

The *pro se* Appellant refers the Board to Appendix 5 (Exhibit "E"). Note that Prof Hagelstein (MIT) supports his previous statements; and also states

**"The scientific results presented by Dr. Mitchell Swartz on his Phusor experiments, in which excess power and total energy is measured, looks very good. His results are competitive in terms of reproducibility and power gain with the best results obtained by other groups around the world. The reproducible energy gains that he has reported are the highest so far reported by any group."**

### **POINT 7: The Decision hAs Misapprehended the Above-Entitled invention**

35. The Decision, without foundation, rubberstamps the Examiner, and disingenuously states,

*"The Examiner explains how Appellant's method is similar to prior unsuccessful cold fusion processes, such as that of Fleischmann and Pons, and notes that the scientific community has concluded that the excess heat identified by Fleischmann and Pons was due to experimental error. Ans. 7-8, 19-20. ... Nonetheless, regardless as to how Appellant's process might differ from past efforts, we agree that Appellant's claimed invention is directed to cold fusion and is not so different from that of prior researchers' work that the reasonable doubt disappears."*

### **The Invention - Decision is Based on Cloth cut of other Art**

The Board of Patent Appeals has misapprehended and overlooked the precise nature of the above-entitled actual invention. The Examiner has attempted to vilify the Applicant and his invention by linking it to "cold fusion" and thereby taking advantage of its negative image. However, because this is wrongful, the flawed Decision heralds this misunderstanding over and over because it does not accurately discuss THIS invention. Instead it is constructed of cloth cut of other Art (that of Fleischmann and Pons; "F+P", \*\*\*\*) in place of the original specification and claims.

**(\*\*\*\*) The Decision uses this error as a segue to attack the Appellant with criticism of other's peoples work, specifically that of Drs. Fleischmann and Pons ("F+P") who were not able to demonstrate a repeatable high level cold fusion experiment or device. The present invention cited Pons and Fleischmann because the Applicant believes that it is proper for applicants to cite prior art. This led to the current derision, descrimination and disingenuity from the US Patent Office. Would the Office and Board really want future applicants to NOT cite prior art out of fear (as is already being done)?**

The present invention is not the work of Pons and Fleischmann. Exhibit "D" (Appendix 4) is nothing like anything F+P discussed. Nor is the rest like what they discussed. As the Hagelstein Declaration states,

**"No one in the field considers Swartz's Phusor experiment to be the same as what Fleischmann and Pons did, or what others have done. It is clearly an original experiment distinct from all that have come before. The USPTO is simply mistaken if they assert otherwise. The specification of "low paramagnetic, low conductivity deuterium oxide, 99.99%, from Cambridge Isotope Laboratories, Andover MA" adequately specifies what is meant by pure heavy water in the context of Swartz's Phusor experiment. Assertions to the contrary in this case by the USPTO are incorrect."**

In the above-entitled original specification, the Applicant noted that his method is unique, and only cited the prior art.

Despite the "rubberstamping" of the Office's false comments, the present above-entitled invention is NOTHING like that of F+P from 1989. Instead, the present invention is unique with complex features which were never even considered by F+P or anyone else, but which were taught in the original specification. Attention is direct to Table 4A and 4B. Therefore, F and P are simply not relevant here.

The Board of Patent Appeals has overlooked that by disregarding the original specification of the above-entitled application, there have followed numerous obvious errors in the Decision. Several of the more obvious ones are discussed in detail below. Other errors in the flawed Decision are listed in Table 4A.

**Table 4A - The Decision does not discuss the Above-Entitled invention**

	This Invention	F+P	# times mention in OS
# times mention in Decision			
No added electrolyte, materials,	+	no	
No electrolysis	+	no	
High Voltage, Low Electrical Current	+	no\	
Low Voltage, High Electrical Current	no	+	
Flux and Metamaterial shape	+	no	
Ohmic Control	+	no	
Electrical Series to Ohmic Control			
Time Integration of Energy	+	no	
Alternate Pathways Showing Energy	+	no	
Thermal Barrier Preserving Phonons	+	no	
Voc Check for Proper Reactions	+	no	
Controlled Current Source to Minimize Electrolysis	+	no	
Use of Optimal Operating Point	+	no	
Public Demonstration of Technology	+	no	
Public Demonstration of Optimal Operating Point	+	no	



**Table 4B - Decision is Based on Cloth cut of other Art**

Number of Times "Cold Fusion" is mentioned in the Above Entitled Patent Application - 1  
(to explain two of the prior art references)

Number of Times "Cold Fusion" is mentioned in the Decision - 8  
(to explain two of the prior art references)

Number of Times "Fleischman" or "Pons" mentioned in the Patent Application - 0

Number of Times "Cold Fusion" is mentioned in the Above Entitled Patent Application - 2  
(to explain two of the prior art references)

36. The Decision overlooks that proof that the present invention is not the cited cloth cut of other peoples' Art includes the simple fact that the present invention which was shown working at MIT openly for a week. There are web sites on the Internet describing it. There are Affidavits and Declarations in the record. F+P did not ever give an open demonstration of their experiment, although the Appellant has. This was referred to in the Appeal and Reply Briefs. It was not discussed in the Decision.

37. The Decision overlooks that unlike the cloth cut of other peoples' Art to which the Board refers over and over, the present invention was shown to Nobel Prize winner Dr. Brian Josephson encouraging him to participate in the field.

38. The Decision overlooks that by focusing on cloth cut of other peoples' Art it has accomplished an improper "bait and switch". The Decision has ignored the above-entitled original specification and claims along with its unique twenty six figures, and Applicant's unique teachings and claims. Did the Decision even consider one of these Figures? Where are the figures and teaching of the above-entitled application discussed in the Decision? They are not discussed in either. They were discussed in the submitted Appeal Brief, but the Board has overlooked that it has ignored them to focus on irrelevant F+P.

39. The Decision overlooks that the present invention is so incredibly different from prior unsuccessful "cold fusion" researchers that it has led to DTRA, DARPA, the US Navy and US Army having considerable interest in the field generally, and in Appellant's work specifically. See Appendix 2 and 10 [Exhibit "B" and "K"]. The work has utility and there has been some funding. Does the Board really purport these organizations waste taxpayer money to fund work of "no utility"? Or is this allegation, in the light of other issued patents in the same field, just more cruel focused discrimination made by the Office and Board against the Appellant?

40. The Board overlooks that it is inaccurate to have the Decision falsely purport that the Examiner has "explained" anything. The Examiner's notions have been proven and shown to be full of holes. Blending an occasional fact with a mountain of untruth does not make the fictitious claims of the Examiner true.

41. The Board overlooks that the Decision evades Evidence, as it cherry picks and "rubberstamps" false purported "facts" which are not true. The Decision has adopted the biased Examiner's "brick toss tactics" without an iota of scientific basis. In summary, every single one of the Examiner's arguments have been discredited, abandoned, found defective or overtaken by events. It is only by deliberately misleading can the Examiner continue the unfounded attack on the Applicant, by the much less relevant art attacking "FP". However, the present invention is not the work of Pons/Fleischmann or their purported subject matter.

Therefore attention is directed to an obvious fact: If the Decision must rely upon reference to art cut of a cloth other than this specification and claims two decades (while ignoring submitted Evidence), then the Office's position must indeed be quite weak.

#### **IMPLICATIONS - INCONVENIENT FACTS**

42. The Decision, if unmodified and allowed to stand, will be below the standards of review because it is solely of cloth cut of other art (structure, operation and composition) rather than that defined by the claims and the original specification. Therefore, the Decision is discriminatory because it is solely based upon the Office's proven-disingenuous arguments.

43. The Board overlooks the egregious variation of the Decision with other rulings showing salient and cruel discrimination by the Board against Appellant for reasons unclear as yet. The Board is inconsistent with *In re Fouche* [439 F.2d 1237, 1243, 169 USPQ 429, 434, (CCPA 1971)], *In re Hogan* [559 F.2d 595, 60S, 194 USPQ 527, 537 (CCPA 1977)], *In re Ziegler* [992 F.2d 1197, 1200, 26 USPQ2d 1600, 1603 (Fed. Cir. 1993)], and *In re Zletz* [893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989)] which state that, for others than Appellant, operability and therefore enablement must be judged on the invention (structure, operation, composition) and the original specification and claims.

The Board is inconsistent with *In re Vaeck* [947 F.2d 488, 495-96, 10 USPQ2d 1438, 1444 (Fed. Cir. 1991)] which states that an enablement rejection under section 112, ¶1 is only appropriate where the written description fails to teach those skilled-in-the-art, like the Declarants, to make and use the invention.

### **POINT 8: The Decision Misapprehends the Above-Entitled invention**

44. The Board of Patent Appeals misapprehends the implication and appearance of impropriety when the Decision rubberstamps the Examiner, as follows,

*"The Examiner also found that Appellant does not disclose additional features or components that would cause Appellant's method to be operable where previous attempts were not. See Ans. 11."*

The Board has overlooked that it has composed a saliently false statement. First, the Examiner has neglected to substantively discuss Applicant's invention accurately as it was actually taught. Instead, the figures, specification, have been ignored. Applicant submits that if the Office must rely upon reference to art cut of a cloth other than this specification and claims, then their position must indeed be rather weak and should dictate allowance of the present invention. In fact, the Office's reliance upon art other than the actual original specifications and claims is presumably a "tongue-in-cheek" fabrication, which heralds bias rather than the proper application of the standards of review for patentability under Art. I, §8, cl. 8.

45. Second, the Board has misapprehended that the Applicant's disclosure contains twenty six figures and accompanying English sentences which, although ignored, prove useful heat is generated by several methods. Attention is directed to the fact that these additional features (totally ignored by the Board with odious discrimination against the Appellant) was discussed in the original specification of the above-entitled application which is ignored, and in the Appeal Brief which is ignored, or apparently missed by the Board (\*\*\*\*\*). Even more egregiously, the Decision has misapprehended the greatest performance (and thus utility) of the invention because it has ignored the six figures which taught how to maintain the excess heat included Figures 13, 14, 21, and 23 through 25. These prove that the specification provides an adequately written description of the subject matter, including how to operate the invention, and claimed the invention so that an artisan, or those skilled-in-the-art, could practice it without undue experimentation both *de facto* and *de jure*.

**(\*\*\*\*) ABSOLUTE PROOF THAT THE BOARD HAS OVERLOOKED THE INVENTION**

**(From the Appeal Brief, citing the ignored specification)**

"Figure 5 shows a graph of the heavy water reaction container's core temperature after deuteron loading is achieved, along with the input electrical power to both the heavy water deuteron-loaded system and the electrical control as a function of time. Figure 6 shows the input electrical power and observed output heat power as a function of time for the heavy water deuteron-loaded subsystem and the electrical control; and also the integrated input energy and integrated energy output of both. Figure 7 shows a graph recording a heavy water reaction container's core temperature, which was obtained on a different run after deuteron loading was achieved, with the input electrical power to both the heavy water deuteron-loaded system and the electrical control. Figure 8 shows the input electrical power and observed output heat power as a function of time for the heavy water deuteron-loaded system and the electrical control; and also the integrated input energy and integrated energy output of both, demonstrating excess heat. Figure 9 shows the input electrical power and observed core temperature for the heavy water reaction container using a codeposition deuteron-loaded system and the electrical control as a function of time [8.2 millimolar palladium (II) chloride]. Figure 10 shows the input electrical power and observed output heat power as a function of time for the preferred embodiment of a spiral wound palladium cathode, when driven using a codeposition solution [8.2 millimolar  $\text{PdCl}_2$ ]. Figure 11 shows graph of the heavy water reaction container's core temperature minus the surrounding controlled temperature as a function of input electrical power in Watts [a  $\Delta T$  vs. input power measurement]. Figure 12 shows the input electrical power and observed output heat power as a function of time for the heavy water deuteron-loaded system and the electrical control; and also the integrated input energy and integrated energy output of both, over several days.

16. Figure 15 shows the power gain of the deuteron loaded heavy water subsystem over approximately 8 days of loading; and demonstrates both the requisite need of full loading prior to full performance and the usefulness of the present invention as a teaching tool. Figure 16 shows the output of the heavy water deuteron-loaded system and the impact of laser optical (coherent) irradiation upon the loaded palladium cathode. Figure 17 shows a graph of the power gain of the deuteron-loaded heavy water subsystem after several weeks of loading. It demonstrates the crucial necessity of not fully removing all of heat from the reactor. Figure 18 shows the input electrical power and observed output heat power as a function of time for a heavy water deuteron-loading system outfitted with almost two liters of light water, and two electrical controls. Figure 18 shows the integrated input energy and integrated energy output of both. Figure 19 shows the output of the heavy water deuterium-loaded subsystem, by plotting the area normalized out excess power [that is, the excess power in watts divided by the area of the palladium cathode] plotted as a function of the input electrical current density. Figure 19 demonstrates a threshold current of the heavy water deuterium-loaded metal subsystem. Figure 20 shows the output of the heavy water deuterium-loaded subsystem as the normalized excess power [excess power in watts divided by the area of the palladium cathode] plotted as a function of the input electrical current density; and demonstrates a threshold current of the heavy water deuterium-loaded metal subsystem, and more importantly, the location of peak performance. Figure 22 shows the output excess power [in milliwatts] of the heavy water deuterium-loaded subsystem [palladium spiral wound cathode loaded in heavy water opposite platinum] plotted as a function of time. Figures 26 through 30 show for a single experiment that the present invention demonstrates the excess heat developed for the fully loaded palladium several different ways.

17. Figure 13 shows the output of the heavy water deuterium-loaded subsystem for many different input electrical powers between approximately 1 through 7 watt, and

reveals a peak output in the performance of the heavy water deuterium-loaded system along the input electrical power axis. Figure 14 shows the input electrical power and observed output heat power as a function of time for the heavy water deuterium-loaded system and the electrical control; and demonstrates the importance of loading. Figure 21 shows the output excess power [in watts] of the heavy water deuterium-loaded subsystem [palladium spiral wound cathode loaded in heavy water opposite the platinum] for a range of applied voltages; and demonstrates a threshold voltage of ~100 volts for significant excess heats of about a fraction of watt. Figure 23 shows the electrical current and voltage characteristics of the heavy water deuterium loaded subsystem. Figure 24 an electrical discharge spectrum of a fully loaded heavy water subsystem, after achieving a fully loaded condition. Figure 25 shows the cell electrical resistance [of the heavy water solution between the preferred embodiment's spiral wound platinum anode and palladium cathode] as a function of temperature for an initially active heavy water deuterium-loaded subsystem.

#### IMPLICATION OF FAILING TO DESCRIBE THE INVENTION

46. There are some serious implications. First, this now-proven-incorrect statement by the Board corroborates that the Decision has not considered the actual invention. Why does not the original specification and claims count? The Appellant reasonably asked: Why are the Figures of the Applicant's invention not even discussed anywhere in the record? They are not discussed in the Examiner's Answer. They are not discussed in the Decision which "rubberstamps" predetermined persecution against the Appellant.

Second, by ignoring such evidence as the original specification and peer-reviewed publications, the Board of Patent Appeals has misapprehended this invention, and the appearance of impropriety it creates, since this will be the third time the Board has "rubberstamped" falsehoods, and the first time knowingly, if the Decision stands.

## **POINT 9: The Decision Misapprehends the Above-Entitled invention Uniquely Uses Pure Water To Minimize Electrolysis**

47. The Decision states and falsely concludes (opposite the original specification):

*The Examiner also maintains that the Specification does not define "pure heavy water," and therefore the phrase is broad enough to encompass Fowler's water. Id."*

*"Appellant argues that the Examiner misunderstands the invention, and that his invention is different than prior experiments. See, e.g., Reply Br. 38. For example, Appellant appears to argue that "the absence of 'additional salts' in the electrolytic solution is a distinguishing feature. Id. at 43."*

*"The Examiner finds that hydrogen is an isotope distinct from the deuterium isotope that forms heavy water and apparently reasons that, because the claim recites "hydrogen," Appellant must have intended that the electrolytic solution include components other than pure heavy water. See id. "*

The Board of Patent Appeals has misapprehended and ignored another difference between the present invention and FP. As the Hagelstein Declaration states,

**"No one in the field considers Swartz's Phusor experiment to be the same as what Fleischmann and Pons did, or what others have done. It is clearly an original experiment distinct from all that have come before. The USPTO is simply mistaken if they assert otherwise. The specification of "low paramagnetic, low conductivity deuterium oxide, 99.99%, from Cambridge Isotope Laboratories, Andover MA" adequately specifies what is meant by pure heavy water in the context of Swartz's Phusor experiment. Assertions to the contrary in this case by the USPTO are incorrect."**

The Board has composed another saliently inaccurate statement, demonstrating indelibly that it has overlooked, and then neglected to substantively discuss, Applicant's invention as it was actually taught. This proves the Decision has misapprehended the invention. The truth is quite far from the Decision and the Examiner's comments, as history will record. Just as Galileo DID see Jupiter and more with his telescope despite the attacks on him, the Appellant's solution has only ultrapure heavy water. This is one of the most important parts of the invention.

Despite being absolutely, positively ignored by the US Patent Office, and then "rubberstrapped" by the erroneous Decision, the original specification teaches (page 18, lines 30-35 through page 21, lines 1-7) and elaborates this, specifically about using an electrolytic solution consisting of pure heavy water without additional salts for minimizing unwanted reactions in a reaction container. The original specification teaches (page 18, lines 30-35 through page 21, lines 1-7) and elaborates for those skilled in the art to make and use the invention using an electrolytic solution consisting of pure heavy water without additional salts for minimizing unwanted reactions in a reaction container. This is taught in the ignored original specification: "The preferred embodiment uses solution, in the reaction container, consisting of very low electrical conductivity heavy water, such as the low paramagnetic, low conductivity deuterium

oxide, 99.99%, from Cambridge Isotope Laboratories, Andover MA. Such very pure heavy water minimizes the unwanted reactions of electrolysis." This is claimed in Claim 6, and is quite different from what is used in the scientific community to which the Examiner does refer. As discussed in the Appeal Brief (averment 42) but ignored, this is Appellant's unique technology where the absence of "additional salts" does matter. The use of only pure heavy water was shown in the ignored peer reviewed publications (Forms 1440 submitted, but ignored). Appellant has proven it in Swartz, M., "Quasi-1-Dimensional Model of Electrochemical Loading of Isotopic Fuel Into a Metal", Fusion Technology, 296-300 (1992), and Swartz, M., "Isotopic Fuel Loading Coupled to Reactions at an Electrode" (1993) and "The Biphasic Nature of Excess Enthalpy in Solid State Anomalous Phenomena is Consistent with the Quasi-1-Dimensional Model of Isotope Loading into a Material". This was discussed world wide in (cf. Swartz-SurveyJSE2010.pdf) Swartz, M.R. "Survey of the Observed Excess Energy and Emissions In Lattice Assisted Nuclear Reactions", Journal of Scientific Exploration, 23, 4, 419-436 (2009).

So it does matter. The negative impact of gas loss is an extremely important point and was only recognized by the Appellant. Cold fusion has always been called "fusion by electrolysis" but, in fact, the exact opposite is true. Everyone was looking in all the wrong places.

NOTA BENE: It is unfair for the Board change and what the Appellant (then Applicant) actually wrote in the original specification. In simple English, the original specification demonstrates that this invention is nothing like F+P. To write a Decision based upon such inaccurate statements has the appearance of impropriety.

## POINT 10: The Decision Misapprehends the invention - Driving Voltage

48. The Examiner's Answer falsely stated,

*"Appellant uses at 2.4 volts between electrodes in his electrolytic cell allegedly to generate excess heat. This cell voltage is no different from that used Miskelly et al., for example, who concluded that the excess heat being claimed by Fleischmann and Pons (F and P) was due to experimental errors and NOT to nuclear fusion. Miskelly et al., used a cell voltage 2.8 to 10 volts in their experiment to verify F and P's claims (see page 246, col. 1, first full paragraph)."*

The Board of Patent Appeals has misapprehended and ignored another difference between the present invention and FP. Despite the Examiner's false statement, deceptive, misleading comment, what the invention really involves is driven by hundred to thousands of volts, and the 2.4 volts is only the monitoring voltage. It says so in the specification. It says so in the claims. This proves beyond a doubt the utter disregard the Examiner has for the Appellant's effort and work, and his refusal to honestly report any matter about the present invention. In the 31 page Examiner's Answer, this is the only issue discussed about the invention and it is absolutely, positively wrong. [underlined for emphasis].

The Examiner's Answer ignores that the original specification teaches (page 18, lines 30-35 through page 21, lines 1-7) and elaborates for those skilled in the art how to drive the invention

**. "Electrical voltage sources include the LAMBDA 340A, LLS3040, LG531, and the HP722AR. The HP/Harrison 6525A, Nobatron DCR-150, and Fluke 412B are used to obtain transsample potentials of voltages up to 3000 volts."**

Attention is directed to the fact that the driving voltage is to 3000 volts, and not the 2.4 volts which the Examiner falsely purports. Despite the Examiner's disingenuous statement, deceptive, misleading comment above, the invention involves is driven by hundred to thousands of volts, and the 2.4 volts is the monitoring voltage. It says so in the specification. It says so in the claims.

49. This is more than appearance of impropriety. This proves that the Examiner has systematically ignored the claims, just like he ignores the specification, the arguments, the Declarations, the Exhibits, the published papers, the open demonstrations, etc. This proves beyond a doubt the utter disregard the Examiner has for the Appellant's effort and work, and his refusal to honestly report any matter about the present invention



### **POINT 11: The Decision Misapprehends the invention - Thermal Barrier**

50. The Board of Patent Appeals has misapprehended and ignored another difference between the present invention and FP. The original specification teaches (page 27, lines 21-31) and elaborates for those skilled in the art to make and use the invention by adding a thermal barrier surrounding the reaction container to retain heat sufficient to continue the activation (referring to the figures). "One important element of this invention, without demeaning any others, is the variable resistor (141) in series with electrical leads 107 and 108. To functionally augment the external thermal barrier (94), but acting a different way [electrical resistor versus a thermal resistance], said variable resistor is in series with lead 107. Said variable resistor (141), from which second side is an electrical lead (142) made to complete the circuit, is importantly used to ensure that enough and sufficient heat remains within the reaction container to allow the desired reactions to continue. An insufficient thermal barrier (94) and variable resistor (141) will remove so much heat as to quench the desired reactions, and thereby degrade the efficiency. Therefore, the purpose of the Heavy water Thermoelectric Control Loss Resistor is to maintain sufficient heat in the heavy water reaction container to continue to support the desired reactions." This is claimed in Claim 6, and is different from other systems in the scientific community to which the Examiner does refer.

### **POINT 12: The Decision Misapprehends the invention - Testing Voltage**

51. The Board of Patent Appeals has misapprehended and ignored another difference between the present invention and FP. The original specification teaches (page 10, lines 1-5) and elaborates for those skilled in the art to make and use the invention by providing an electric power system with two electrodes to load one electrode with said hydrogen to activate heat production by achieving an open circuit voltage of at least 2.4 volts between said electrodes. "(I)n the present invention, current source electrical driving conditions are used until the open circuit voltage [Voc] equals or is greater than 2.40 volts. After that attainment, the desired conditions because available even when an electric voltage source used as the power supply because with a Voc  $\geq$  2.40 volts then there is adequate filling (full loading)." This is claimed in Claim 6. Claim 6 says, "A process for... providing an electric power system with two electrodes to load one electrode with said hydrogen to activate heat production by achieving an open circuit voltage of at least 2.4 volts between said electrodes" This is not the driving voltage however that the Examiner falsely deliberately purports. The Examiner is deliberately misread the above-entitled application. In the 31 page Examiner's Answer, this is

almost the only issue the Examiner discussed about the present invention. And on this he is proven wrong.

**POINT 13: The Decision Misapprehends the invention - more than two steps.**

52. The Examiner's Answer falsely states,

*"The claimed production of what is known in this art as "excess heat" takes place by means of the first two steps in claim 6. These two steps basically refer to "loading an electrode with heavy hydrogen to the point where nuclear fusion takes place. These two steps of the appellant are basically no different from any of the other electrolytic "cold fusion" system/processes that the scientific community in general has shown to be inoperative."*

The Board of Patent Appeals has misapprehended and ignored another difference between the present invention and FP. First, the Examiner misstates the steps involved. The specification, and claims, and figures demonstrate the invention is operative. Furthermore, there are more steps and teachings that distinguish the present invention. Despite the Examiner's false statement above, the invention involves more than two steps discussed beginning on page 18, lines 30-35 through page 21, lines 1-7. Second, there is a monitoring regime using open circuit voltage that the Examiner repeated confuses for the driving voltage (see below). These constitute the invention. But all have been ignored.

**POINT 14: The Decision misapprehended the Quality Controls and Quality Assurance Of this Invention**

53. The Decision states,

*"The Examiner further finds that Appellant's assertion that the Specification evidences excess heat is suspect because Appellant has not adequately accounted for possible errors. Id. at 20-21."*

The Board of Patent Appeals has clearly misapprehended the science, calibration, and quality control behind this invention (confer Appendices 91 through 98 and 111, for example). First, despite what the Examiner has purported, the error limits WERE listed in the patent application. Errors and quality assurance were discussed in the original specification and in the submitted, but sequestered, peer reviewed publications which were conveniently ignored by the Examiner.

54. Second, Quality Controls (Q/C) and Quality Assurance protocols WERE used by the Applicant to create, and test, this invention. Measuring error limits using redundant technology, is exactly what the invention is about. The indelible proof that the Board

has odiously "rubberstamped" the Examiner to impugn the Appellant on these putative errors is that not a single error was ever specified, even after being asked.

55. Third, as was discussed, but ignored, in the Appeal Brief (Averment 109), the Decision has ignored that no other investigator in the field has published such clear levels of signal with respect to noise (Swartz 97B, Swartz 97F, Swartz 97D), means of calibrating said signals for long term analysis (Swartz 97E, Swartz 97D, Swartz 97C, Swartz 96C), correction for Bernard instability (Swartz 96D), correction for noise artifacts (Swartz 97F), and for other types of artifactual signal (Swartz 97C, Swartz 96A, Swartz 94C, Swartz 94D). The ignored Declaration of Dr. Swartz said: "I have published extensively on errors and noise in cold fusion systems, and on other artifacts which can give rise to false indications of "excess heat" ("Noise in Cold Fusion Systems", submitted J. New Energy for Summer 1997, Swartz, "Improved Calculations Involving Energy Release Using A Buoyancy Transport Corrections", Journal of New Energy, 1, 3, 219-221 (1996); Swartz, "Potential for Positional Variation in Flow Calorimetric Systems", Journal of New Energy, 1, 126-130 (1996) ); Swartz, "Definitions Of Power Amplification Factor", J New Energy, 2, 54-59 (1996); Swartz, "Explanations for Differences Between Reports of Excess Heat in Solid State Fusion Reactions", J. New Energy, 2, (1997); Swartz, "Relative Impact of Thermal Stratification", J. New Energy, 1,2, 141-143 (96)); Swartz, "Some Lessons From Optical Examination Of the PFC Phase-2 Calorimetric Curve", Vol. 2, Proceedings: "Fourth International Conference on Cold Fusion", sponsored by EPRI and the Office of Naval Research, December (1993), published July 1994). No matter how many times these articles have been sent with Forms 1440, they have not been recorded, or discussed.

#### **TABLE 5 - Quality Control in Appellant's Peer-Reviewed Publications**

- Swartz, M, Science and Engineering of Hydrided Metals Series, Volume 2 - "Calorimetric ComplicationsThe Examination of the Phase-II Experiment and Other Select Calorimetric Issues, ISBN 1-890550-02-7 (1999).
- Swartz, M, 1996, "Improved Calculations Involving Energy Release Using a Buoyancy Transport Correction", Journal of New Energy, 1, 3, 219-221
- Swartz, M, 1996, "Potential for Positional Variation in Flow Calorimetric Systems", Journal of New Energy, 1, 126-130
- Swartz, M, 1994, "A Method To Improve Algorithms Used To Detect Steady State Excess Enthalpy", Transactions of Fusion Technology, 26, 156-159
- Swartz, M, 1997, "Explanations for Some Differences Between Reports of Excess Heat in Solid State Fusion Experiments", J New Energy, 2, 1, 60-65.
- Swartz, M,1993, "Some Lessons from Optical Examination of the PFC Phase-II Calormetric Curves", Vol. 2, Proceedings: "Fourth International Conference on Cold Fusion", 19-1, op. cit.
- Swartz, M, 1996, "Definitions Of Power Amplification Factor", J New Energy, 2, 54-59.

- Swartz, M. with Marwan, J, M. C. H. McKubre, F. L. Tanzella, P. L. Hagelstein, M. H. Miles, M. R. Swartz, Edmund Storms, Y. Iwamura, P. A. Mosier-Boss and L. P. G. Forsley, "A new look at low-energy nuclear reaction (LENR) research: a response to Shanahan", J. Environ. Monit., (2010)
- Swartz, M., 1996, "Relative Impact of Thermal Stratification of the Air Surrounding a Calorimeter", Journal of New Energy, 2, 219-221 (1996)

56. Fourth, the Board of Patent Appeals may have misapprehended or overlooked that it is wrong to impugn the Appellant, Dr. Mitchell R. Swartz, who has the degrees of BS, MS, EE, and ScD in Electrical Engineering from the Massachusetts Institute of Technology and an MD from Harvard Medical School. It is an uncontested fact that the Examiner has wrongly and repeatedly impugned the Applicant, who is knowledgeable about the subject which the Examiner purports to be "an expert judge" (background was not provided by Dr. Palabrica about himself regarding his own sterling qualifications). The Appellant trained at the Massachusetts Institute of Technology in electrical engineering, physics, and biomedical engineering over 18 years with 4 degrees including a Doctorate of Science (ScD), and at Harvard with an MD, is Board Certified, including in Radiation Medicine, served a surgical internship, a radiation medicine residency and fellowship at the Massachusetts General Hospital, is Board Certified in Radiation Oncology, has an NRC license for implanting radioisotopes into humans, has treated over 14,000 people with cancer, has worked at the Laboratory for Insulation Research at MIT since 1968 with Prof. Arthur von Hippel, was the first to treat intrapericardial invasion by carcinoma successfully (\*\*\*\*), and has researched at several Boston hospitals and companies across the USA, leading to contributions to PET imaging of human tumors, electrophotochemotherapy for treating human tumors and infectious organisms, and sensors using composites of biomaterials and semiconductors, nuclear medicine and nuclear physics.

The Appellant's efforts in diagnostic radiology resulted in the first human examination of a cancer patient with positron emission tomography. That involves time-of-flight measurement and 3D reconstructions which in the late 1970's was novel. The papers published which thereafter led that field included: G. Brownell, A-E. Kaireto, Swartz, M.R., "PET imaging in Oncology: The MGH Experience", Seminars in Nuclear Medicine, 15, 201-209, April (1985), G. Brownell, A-E. Kaireto, Swartz, M.R., "PET imaging in Oncology: The MGH Experience", Arch. Nucl Medicine May (1985), A-E. Kaireto, G. Brownell, D. Elmaleh, Swartz, M.R., Comparative Measurement of Regional Blood Flow, oxygen and glucose utilisation in soft tissue tumour of rabbit with positron imaging" Br. J. of Radiology, 58, 637-643, (1985).

The Appellant's efforts in therapeutic radiology included curing patients of diseases which were not curable previously [confer T.Lo, F. Salzman, and M. Swartz, "Radiotherapy for Cancer of the Head and Neck", Otolaryngologic Clinics of North America, 18, Aug 1985, 521-531 (1985)].

In fact, the Appellant (trained before he was an Applicant) is an expert in science of water. He did several theses at Massachusetts Institute of Technology involving water, including one with Prof. Arthur von Hippel and one with Prof. Stephen Senturia.

So, it would be reasonable for the Board to ask:

**On what basis does the Board and Examiner have expertise in this matter, too? What is the basis for the attack on Dr. Swartz that allows both the Board and Examiner to not even have to say what the error(s) is(are)?**

**How can the Decision impugn the Appellant, a physician Board Certified physician on absolutely no basis whatsoever?**

**What possible basis is there for the Board to impugn Dr. Mitchell Swartz, Board Certified, licensed, 5 degrees from MIT, one from Harvard, other than he showed up with an improvement on a heat generation system that also makes electricity and can be used in teaching?**

**(\*\*\*\*) Confer Swartz-EsophagFistula.pdf**

57. Fifth, and perhaps most important of all, the Appellant (then Applicant) has asked the Examiner "Where are the errors? Where are they cited? Where were the purported errors in all the graphs of the original specification?" Asked to address this, when the onus was on the Examiner, instead of clear statements rebutting the detailed, precise, specific, substantive, Declaration-supported, factual and legally proper arguments by the Applicant, he has been silent. Where is the Examiner's response? It does not exist. Not to any of them. The Examiner failed to substantively address Applicant's detailed, substantive, arguments. The Examiner has not ever, and cannot, support his arbitrary allegations against the Appellant.

58. NOTA BENE: It is egregious that the Board ignored that the Appeal Brief and Reply Briefs noted that these alleged "errors" have NEVER been listed. (underlined for emphasis)

59. The Board should have asked if Dr. Palabrica has impugned the Applicant claiming that only the Applicant's equipment is suspect. The Board should have asked if Dr. Palabrica checks every other applicant trained at MIT, every other physician and surgeon trained at Harvard and the Massachusetts General Hospital, or is this just further salient and plain Evidence of discrimination by Dr. Palabrica against the

apparently-targetted Applicant. The Board should have asked Dr. Palabrica for the basis of impugning the Applicant regarding this matter.

60. Finally, in summary, there are at least two conclusions. First, because the alleged errors are NOT listed, and in the light of the Board ignoring submitted Evidence in the record supporting that the invention DOES operate as indicated, there is the appearance of impropriety.

Second, because the alleged errors are NOT listed, and in the light of the Board ignoring submitted Evidence and of the Examiner having already been caught removing Declarations from the Board by the federal appellate court in a previous case, in this endless abuse of Dr. Swartz, there is the appearance of systematic discrimination by the Office, ignoring Congressional directive by the Office and Board.

## **MISAPPREHENSIONS ABOUT THE FIELD**

### **POINT 15: The Decision overlooked Sterling Evidence Supporting this Field and Invention**

61. The Board has overlooked that by ignoring the original specification of the above-entitled application, and "rubberstamping" the Examiner, is nothing more than a "boilerplate" and "witch-hunt" attack on the words "cold fusion". The notion of the Examiner that lattice related nuclear reactions do not exist, and that there is no nuclear chemistry in deuterated palladium alloys, is not true. The literature shows he is wrong. The Office's witness say he is wrong. They disagree with the Examiner. The Declarants disagree. DTRA disagrees. DARPA disagrees. The US Navy disagrees. Thousands of scientists disagree.

Confer Affidavit-NRLonSwartz-2006.pdf, LANRpub-LENR\_DIA.pdf, LANRpub-ProcICCF14a.pdf, LANRpub-ProcICCF14b.pdf, and Swartz-SurveyJSE2010.pdf.

Confer the Hagelstein, Ahern, Swartz Bass, Rotegard, and Mallove Declarations, and the Valone, Fox, and Mallove Amicus Curiae Briefs]. As the Amicus Curiae Brief of Eugene F. Mallove, Sc.D (Editor, New Energy Research Laboratory, NH) has stated,

**"The most notable characteristic of the attack against the Swartz patent application at hand is its stale fixation with misrepresented events of 1989, its citation of erroneous reports, and its continued argument from supposed authority, rather than from evolved science and meticulous experiment."**

The Declarations demonstrate the existence of lattice assisted nuclear reactions including the generation of heat. Nothing has been presented by the Office or other Art which rebuts the Declarations or the amicus curiae Briefs of Straus, Chubb, Mallove, Fox, and Valone. Nor has the Examiner presented any argument of substance to support his incorrect, proven-wrong, notions.

**"The Examiner states that cold fusion does not exist; that it is "an unproven concept". The Examiner is incorrect in a reliance upon the text by Dr. John R. Huizenga, entitled Cold Fusion: Scientific Fiasco of the Century, [University of Rochester Press, 1992]. Attention is directed to the simple fact that Dr. Huizenga ignores essentially all the positive evidence for cold fusion. Dr. Huizenga leaves out virtually everything after 1989."**

[Declaration of Dr. Eugene F. Mallove ---- Serial no. 07/ 371,937 Feb. 7 '94]

**"Hundreds of scientists in the USA, Japan, Italy, India, the PRC, France, Russia and elsewhere are investigating nuclear reactions in metals saturated in hydrogen or deuterium."**

[Amicus Curiae Brief of Dana Rotegard, No.00-1191, 00-1107 (Serial No. 07/371,937)]

The Hagelstein Declaration states,

**"Today, D/Pd loading is known to be very important. There have been numerous peer-reviewed published papers that show positive excess heat results in replications of the Fleischmann-Pons experiment. If the USPTO have asserted otherwise, they are simply mistaken."**

The Ahern Declaration states,

**"It is my professional as well as personal opinion that this field is real in spite of opinion of the Patent Office. The early lack of reproducibility combined with the unfortunate early claims of Pons and Fleischman have combined to dis-credit this entire area of investigation."**

62. The Board has overlooked that there is evidence that "lattice assisted nuclear reactions" [LANR] are real. The Board has overlooked that the submitted references to the Examiner (and the Applicant has destroyed three professional copy machines to afford the Examiner the opportunity to ignore this material) demonstrate that the Office's notion is wrong.



As a courtesy to the Board, excerpts of what is already in the record is hereby attached in Appendix 14 (Exhibit "P"), titled "Review of Lattice Assisted Nuclear Reactions for the Board of Patent Appeals". This material has already also undergone peer-review, including (confer Swartz-SurveyJSE2010.pdf) Swartz, M.R. "Survey of the Observed Excess Energy and Emissions In Lattice Assisted Nuclear Reactions", Journal of Scientific Exploration, 23, 4, 419-436 (2009).

==> The Appellant prepared a detailed Appendix which is scientific beyond the scope of this Request. The material in that Appendix is available if there is any member of the Board of Patent Appeals or USPTO that is seriously interested in the breadth of serious science and relevant engineering. Nineteen pages are in Exhibit "P" (Appendix 14).

#### **POINT 16: The Decision overlooked Sterling Evidence Supporting this Field and Invention**

63. The Decision has overlooked that the Examiner has improperly mischaracterized the Declarations so that the Affiants have been substantively ignored. Those who saw the week long open demonstrations of Applicant's technology at MIT in the Electrical Engineering building in 2003 during ICCF-10 have had their Declarations submitted to the Examiner, but their comments have been substantively ignored. Those who have examined Applicant's technology and filings have submitted Amicus Curiae Briefs and Declarations regarding the above-entitled application have been substantively ignored. In the past, with no foundation, the Examiner has done more than simply ignore factual, relevant, Declarations, and impugning Declarants. In other cases before the Board, he has also been evasive, discourteous and disingenuous. In fact, several of the Office's "witnesses" have thereafter taken the time to write Amicus Curiae Briefs and letters to the effect that the Examiner has absolutely misstated what they wrote or implied. Other Declarants have stated that Dr. Palabrica and the Office are factually wrong.

#### **POINT 17: The Decision Overlooks that the Office's OWN References Disprove it**

64. The Board of Patent Appeals has overlooked Evidence in the record attesting to the uncontested fact that the Office has repeatedly ignored its own witnesses, after it was brought to the Examiner's attention that the Office's witness support the Appellant (then Applicant). Why? Because they add to the reputable evidence of record that the

present above-entitled invention, as disclosed, is capable of operating as indicated and is capable of providing a useful output.

Case 1: The Office's witness NCFI supports the existence of, and significant investment in, the "cold fusion" phenomena. The NCFI Report documented widespread examination of these phenomena.

**"Cold fusion work continues in many countries ... The occurrence of nuclear reactions in deuterium-loaded solids, such as palladium and titanium can no longer be reasonably denied. ... Several government laboratories are continuing their work on cold fusion, among them most notably are Los Alamos National Laboratories, The Naval Research Laboratory, The Naval Underwater Systems Command and The Naval Weapons Center. Significant positive results have been obtained in each of these laboratories. ... Over 100 groups from more than 12 countries have now reported on various types of evidence for the occurrence of nuclear reactions in deuterium-loaded metals or compounds."**

[F. Will; Final Report National Cold Fusion Inst. (1991)]

Case 2: The Office ignores the Office's qualified witness, Dr. Rehn, U.S. Navy, who said

**"Perhaps the clearest scientific fact, at this time, is the hardest for physicists to accept: nuclear reactions apparently do occur in deuterium-loaded Pd, Ti, and probably in other solids."**

[Office of Naval Research Asian Office; NAVSO P-3580, Vol. 18, Jan. 1993].

## **POINT 18: The Decision Misapprehends REPRODUCIBILITY**

65. The Decision has overlooked or misapprehend the two different meanings of the word(s) "(not) reproducible". In the parlance of the Office, when referring to "cold fusion", the word(s) "(not) reproducible" are a euphemism for "wrong". This is unfair and discriminatory because when used more generally, however, these words can even apply to scientific (and medical) fields which actually do engender respect and/or validity, and where "reproducible" only refers to the number of samples in a cohort developing the desired effect. Would the judges of the Board ever withhold curative treatment of a patient --or their own family member-- just because such therapy is not "reproducible"? No, they would not, when discrimination is not involved.

It is obvious that the restriction that the Office creates using the word "reproducible" in the present case would obviously create unreasonable hurdles for inventors in such fields as cancer treatment, meteorology, or the sciences of earthquakes, lightning, sunspots, solar storms. Thus, the Decision has conveniently ignored Appellant's argument radiation therapy, and the *pro se* Appellant is Board Certified in this subject has had an NRC license for radioisotopes, accounts for the cure of more than 60% of

adults afflicted with solid tumors composed of malignant disease, and obtunds the pain in 80% (or more) of patients treated palliatively, there is almost always a clinical effectiveness. Yet it is not possible to know in advance which patients are going to be cured nor is it necessarily reproducible in any single patient. Thus there is clinical proof and utility, despite the lack of reproducibility in any single individual or cohort of patients. Thus, the claim that "reproducibility" must necessarily be absolute for there to be "utility" is also simply not true. hus, in summary, if the Office throws out cold fusion patent applications because there is not 100% reproducibility for each experiment, then probably all of the pharmaceutical and biomedical device patents should, for similar reasons, be voided nunc pro tunc.

#### **POINT 19: USPTO Versus The Developing Field of CMNS/LANR/LENR**

66. The Decision has overlooked that the Examiner and the Office have worked against cold fusion, and every invention associated with it it. The Decision has overlooked the once-secret (now public) egregious SAW Memorandum which was an Exhibit in the Appeal Brief [Appendices 83 and 84; and see the Judge's comment in Appendix 82]. The Decision has overlooked that the Office has planned *a priori* to not grant "the right to exclude others from making, using, or selling the invention throughout the United States," for a period of 17 years [35 U.S.C. 154].

**(\*\*\*\*) The Applicant was never informed that their application and Board of Appeals fee monies were being stolen, as was their live's energies. This behavior, especially during War where Energy is serious, although mocked by the Board. It is wrong for the Board to attack the Appellant for bring this up. The security of the USA is very important to some, and less so to others apparently.**

**POINT 20: The Decision Overlooks BAD CONDUCT BY THE EXAMINER in OTHER CASES BEFORE THE BOARD**

67. The Decision has overlooked that the *pro se* Appellant has had Appeal Briefs and timely submitted Evidence withheld, sequestered, and removed from the Board of Patent Appeals in the past. The Decision has overlooked that the *pro se* Appellant has had his invention misdescribed to the Board in the past. The Decision has overlooked that the Amicus Curiae Briefs were in the court, or were kept from the court by the DOJ, as the Examiner has claimed because the DOJ supported the Appellant, but the Examiner and Office conspired to prevent justice (Exhibit "S"; Appendix 17). Therefore, a few examples are now given for the edification of the Board, supported with full documentation from the federal appellate record.

**POINT 21: The Decision Overlooks That Someone In the Office Previously Removed Evidence From the Board**

68. In '937, the Examiner wrongly removed Declarations from the file folder -- but was only exposed through the federal court proceedings AFTER the Board of Patent Appeals rendered its Decision (\*\*\*\*\*). In the discussion below, reference is made to the record of other of Appellant's inventions already before the Board of Patent Appeals and Interferences. For example, in '937, (then '480, '677, and '258; was before the Board as Appeal No. 94-2921). To facilitate for the Board, there are attached on CD ROM, many important Declarations and Exhibits discussed herein. For example, the responses of Dr. Mitchell Swartz in that federal appellate case and the resultant Petition for Certiorari to the Supreme Court of the USA are hereby incorporated because of what they demonstrate.

(\*\*\*\*) This is probably why why Dr. Palabrica has prevented most of the Appellant's Appeal Briefs from reaching the Board of Patent Appeal. These unlawful actions are about to precipitate several federal lawsuits, and upcoming Congressional investigations, which otherwise would be unnecessary.

**POINT 22: The Decision Overlooks A History of Examiner's Disingenuity '937 - The Examiner Previously misdescribed An Invention To the Board**

69. In '937, the Examiner was disingenuous to the Board claiming there was "excess energy" was involved. Those words were never in the original specification and claims. It was never true as the Office claimed that the Applicant claimed or discussed "excess heat". The Board of Patent Appeals and Interferences "rubberstamped" the Examiner's

false argument, and it was mentioned dozens of times in the Board's Decision, yet the phrase, "excess heat" was never even used, not once, in the original specification and claims.

### **POINT 23: The Decision Overlooks A History of the Examiner's Disingenuity**

#### **'937 - The Examiner Previously Removed Evidence From the Board**

70. In '937, a case previously before the Board, the Office was disingenuous about Evidence because it was revealed after the Board's Decision (In re Swartz) that not all the pleadings and Declarations were actually logged into the record. When a duces tecums was delivered to the USPTO's counsel in the federal appellate court, it was revealed that some of the Declarations were egregiously hidden from the Board.

71. The exposure demonstrated that the Office had failed to log in or consider all the relevant submitted Declarations - despite a previously ignored Remand by the Board to do just that. Only as a result of discovery in federal appellate court were the following discovered:

The Office's "docket" given to the Board was inaccurate in several ways (Exhibit "R"; Appendix 16).

The Office's "docket" was not timely recorded by the Office.

Forty-three (43) of the timely-submitted pleadings, Declarations, and letters sent by the Appellant were not even recorded.

Several of the timely-submitted sworn Declarations were incorrectly listed as "letters".

Nearly twenty pleadings were listed out-of-order (showing they were not timely recorded), and only later inked in with half-numbers [e.g. "1/2"]. Specifically, the Declarations were entered late after the case left the Board. The docket was doctored to give the appearance of nothing having been submitted.

Six (6) pleadings of, or communications by, the Office were not sent to the Appellant.

No explanation was given for the eighteen (18) Office's entries out-of-order temporally, indicating that the purported "Docket" was not made contemporaneously --- and in defiance of the Office's date stamps --- and in violation of 18 U.S.C. 2071.

72. Attention of the Board, is directed to the fact that revelations heralded that someone in the Office had 'doctored' federal documents. This was just as the Appellant had informed the Board, but the information was ignored. Instead, in '937, the Board, myopically or in concert, "rubberstamped" false statements on a doctored docket.

73. As a result, there was a Petition for Certiorari to the Supreme Court of the United States (00-1191) and a Request for Consideration. The US Patent Office defaulted (ie. failed to answer). The Office failed to Respond in the Supreme Court (twice). According to the clerk at the US Supreme Court, this was the first time in history they had ever defaulted. "Fatetur facinus qui iudicium fugit."

74. This fraud by someone, or a group of individuals, at the USPTO has prejudiced the Board against the Applicant (then Appellant). That is obvious. This is a serious matter because the USPTO and the Board of Patent Appeals and the writers of the SAW Memorandum and possibly another group are operating outside of the Constitution, the Congress, and the Law, to create a biased, 2-tiered discriminatory system.

75. At least one important question remains: Why did the Patent Office refuse to respond to the Appellant's Petition for Certiorari (00-1191)? It was the USPTO's first time in history to have defaulted. It is probably because it became clear that the Office had failed to log all the relevant submitted Declarations. Furthermore, it became clear that the Office had corrupted the record and then misled the Board and then the Court mischaracterizing the above-entitled invention by claiming there was "excess heat" when it was never even mentioned in the original specification and claims. Also, because newly discovered Evidence including the SAW Memorandum has revealed that the Examiner and his group Art have acted in conspiratorial behavior encouraging systematic violations of 18 U.S.C. §1001. By contrast, the U.S. Supreme Court has ruled that any *pro se* litigant is entitled to less stringent standards [U.S. Rep volume 404, pages 520-521 (1972)].

**POINT 24: The Decision Overlooks A History of the Examiner's Disingenuity**

**'970 - The Examiner Previously Removed Evidence From the Board**

76. Corroborating the above, in '970, another case previously before Board, the Office's "docket" was also inaccurate in several ways. Thirty seven (37) of Appellant's pleadings and Declarations were not recorded. As many as six (6) pleadings of, or communications by, the Office were not sent to the Appellant. The analysis reveals that, curiously, seven (7) of the Office's entries are out of order, indicating that the purported "Docket" was not made contemporaneously.

**POINT 25: The Decision Overlooks A History of the Examiner's Disingenuity**

**'937/'677 - The Examiner Previously Refused to Be Corrected When misdescribing the Invention**

77. The Examiner completely, systematically, has cruelly misdescribed each of the Appellant's inventions. In addition to the above-entitled case, '143, as corroboration of disingenuity by the Examiner in case '677 (a Continuation of '937 which was, and probably will be, a case before the Board of Patent Appeals ('258), the Examiner has repeatedly, systematically, even abusively, mischaracterized the original specification, the invention, and even the figures. When confronted with his errors, the Examiner has routinely been disingenuous, then non-responsive (see next section for more detail).

As just one example of many, the Examiner previously, knowingly, falsely stated,

*"Applicant loads and monitors the loading of deutérons in a cathode material in an electrochemical cell. In order to realize the applicant's claimed usefulness of his process, the loaded cathode must be removed from the electrochemical cell and installed in a fuel cell or other energy devices. However, there is neither an adequate description nor enabling disclosure as to how any deuteron stored in the cathode would remain in the cathode after the voltage source is turned off nor how any deuteron stored in the cathode that is in the electrolytic cell, could be released for subsequent use, so as to provide a utility. "*

**THE TRUTH - EXAMINER MISDESCRIBED THE INVENTION**

In fact, the Examiner's statement above is absolutely, positively, NOT true. Despite the Examiner's false deceptive, misleading comment above, in fact, it is just the opposite of what Dr. Palabrica claims, confirmed by the ignored Swartz Declarations relevant to that matter, and the rest of the Evidence, and even the original specification (page 41, lines 1-3).

**"Accordingly, it is a principal object of the present invention to provide a novel method and system to monitor loading. Specifically, the loading is monitored in situ."**

The Examiner was knowingly inaccurate because the original specification states (page 4, lines 14-18) that the present invention is useful because

**"(p)resent methods to monitor the changes of deuterium loading into palladium (and other metals) are made difficult in that the material must be removed from the reaction chamber, thereby not only stopping the reaction, but also cross-contaminating both the cathode and the laboratory."**

The original specification (page 41, lines 1-3) teaches

**"Accordingly, it is a principal object of the present invention to provide a novel method and system to monitor loading. Specifically, the loading is monitored in situ." [underlined for emphasis].**

So there it is again. The Examiner was untruthful. There is no removal of the cathode. The original specification says it. The Examiner ignored the specification. The Examiner simply confabulated it -- and then would not let the Applicant appeal it to the Board of Patent Appeals

78. The Examiner has a past history of disingenuously twisting facts around. One example is his purporting that the invention involves removing the electrode, when the original above-entitled specification says otherwise. The Examiner has simply ignored the Applicant's grounded, scientific, Declaration-supported, arguments. The Examiner should have considered and precisely commented upon the Applicant's substantive reply accompanied by the solid evidence already submitted. But he has not.

## **POINT 26: The Decision Overlooks A History of the Examiner's Disingenuity**

### **'937/'677 - The Examiner Ignored The Order from the Board**

79. In the case '937 (now '258), the Board ignored that the Office failed to respond with specificity and substance as the Board ordered. The failure of the Office to substantively and precisely reply to the Board's Order for a response to the relevant Declarations is a matter of fact.

The Order of the Board in remand stated,

**"Further, the examiner should explain why these 'filings' and 'references' are inadequate in evidentiary weight, to overcome the evidence proffered by the examiner."**

The Office ignored Orders from the Board and the Examiner continues to contemptuously ignore Orders from the Board. That remains as true today, as it does then.



80. In '937/'480/'677/'258, it is egregious that the Remand Orders from the Board remain substantively ignored despite remand Orders requiring a reply to the Declarations which prove operability. Meanwhile, the Examiner, unsworn, impugns scores of Declarants who have submitted sworn affidavits. Meanwhile, the Examiner has prevented the Applicant (there Appellant) from returning to the Board, and on one occasion, the Examiner's were exposed by the Board in the process of communicating with them *ex parte*. In the above entitled action, the claim that this is *ex parte*, heralds he may have gone behind the Applicant's (now Appellant's) back again. Appellant reserves all rights if this is true.

81. In the above-entitled action, '143, just like '937 and '970 and other applications (see above), the Examiner and Office have achieved "rubberstamped" Decisions by a combination of disingenuity, fraud, contempt, and deception, achieved while hiding Evidence consisting of peer-reviewed published scientific articles and Declarations.

82. The Decision misunderstands that by endorsing and condoning these wrongful actions as it depends upon cloth cut of other art heralds that the Office's case is quite weak, and because it is based upon such improper and inaccurate "examination", the patent should be issued.

## **SUMMARY MISAPPREHENSIONS ABOUT THE PRESENT INVENTION**

### **POINT 27: Possible Appearance of Impropriety In the Decision**

83. In fact, a Decision which deliberately ignores the inventions (such as the egregious Decision of the November 1, 2010 in the above-entitled action) is improper, and is disrepective of the law and the standards for review for patentability. Supplementing the above, the Applicant cites references proving discrimination and systematic disingenuity by the US Patent Office against him. These are on the attached CD ROM. This is important because they show Evidence of secret plans by some in the US Patent Office to discriminate against Applicant and the entire field. As the Hagelstein Declaration states,

**"13. According to the USPTO website, the mission is described as: The USPTO mission is to ensure that the intellectual property system contributes to a strong global economy, encourages investment in innovation, and fosters entrepreneurial spirit. The USPTO promotes industrial and technological progress in the United States and strengthens the national economy by:**

**"Administering the laws relating to patents and trademarks.**

**"Advising the Secretary of Commerce, the President of the United States, and the administration on patent, trademark, and copyright protection.**

**"Advising the Secretary of Commerce, the President of the United States, and the Administration on the trade-related aspects of intellectual property".**

**In the general area of the Fleischmann-Pons effect, the USPTO accomplishes exactly the opposite of its mission. The global economy is faltering, and this technology could make a difference, but is not allowed to do so because of the USPTO. The USPTO hinders industrial and technological progress, since patents generally are not allowed, because there is little or no investments (because intellectual property cannot be protected). In general, the USPTO prevents progress through its actions, contrary to its mission statement."**

84. The Examiner has acted wrongly, and has a history of this. The Ahern Declaration states,

**"I sympathize with the Applicant, Dr. Mitchell Swartz. I can understand his frustration with one USPTO examiner, namely, Mr. Palabrica, who was an examiner for my filing of a patent application on an invention involving high energy density discharges and their intensification by high voltage pulses in liquids. For this invention, I drew on the vast experience of decades of exploding wire experiments and other high energy density studies. I based the invention on the same principle that is routinely observed in femtosecond laser-matter interactions. This invention was useful because energy could be extracted. My patent application was taken by Mr. Ricardo Palabrica."**

**"The Examiner Mr. Palabrica denied my application and dismissed all of my claims on the grounds that he deemed that it was "cold fusion". My technology, my scientific explanations, and my arguments were summarily essentially ignored and dismissed by Mr. Palabrica, as he appeared to have pre-judged my technology and invention as part of the 'cold fusion' phenomenon. It was not. I did not even use those words. I did not even use the word "fusion" in my filing. I did use the metal palladium and heavy water, but the similarities ended there."**

85. The Examiner has been found to have been disingenuous about the Declarations submitted which prove the Examiner wrong. The Office has hid Declarations.

The Examiner has been found to have been disingenuous about the peer-reviewed publications submitted which prove the Examiner wrong.

The Examiner has been found to have been disingenuous about the present invention.

The Examiner has been found to have been disingenuous about the arguments of Applicant.

86. On the basis of the above, one can deduce that after all the USPTO mischief, that the 'deck has been stacked' against the Applicant. The rejection for putative "lack of operability" or "enablement" under 35 U.S.C. §112, ¶1 and "lack of utility" under 35 U.S.C. §101 has only been made by ignoring the original specification and claims, by ignoring the timely-submitted un rebutted Declarations, by ignoring scores of Exhibits and references, and by ignoring the Office's own rules, and thus by the Office having created an arbitrary two-tier "standard of review" for patentability.

87. On one hand is the Applicant's Evidence -in addition to Declarations- has supplied and cited over 300 papers, over 30 of his own peer-reviewed papers (several published by the American Nuclear Society), and other art and Declarations demonstrating the PTO is wrong in their opinion (\*\*\*). "

**\*\*\* --- The Office must eventually admit that, as in baldness control, the field discussed by the Office where the present invention can be used, does exist. Furthermore, corroborating that fact, the PTO has granted patents in this field, just as they are granted around the world.]**

On the other hand has been the USPTO coverup with the SAW Memorandum. It is apparent that the Office has used any and all means to stop the patent no matter the amount of disingenuity needed, or discrimination needed. The Office's actions do not comport with any notion of fair play or justice.

#### **Table 6 - Table of Evidence Showing Systematic Discrimination Against the Applicant**

The following documents confirm planned discrimination by the Office against Applicant and this field.

Appendix 82 ---- PTOcfCOVERUP-Decision-JudgeMoorevsPTO2005.pdf

Appendix 83 ---- PTOcfCOVERUP-Memorandum 1989.pdf

Appendix 84 ---- PTOcfCOVERUP-SAWmemorandum-2006.pdf

Appendix 85 ---- PTOcfCOVERUP-Transcript-ValonevsPTO-2004.pdf

#### **POINT 28: 2 TIERED Treatment Means Discrimination**

88. The Decision has misapprehended that it has condoned a two-tiered system void of due processes, where Appellant is "unequal under the Law", with the appearance of impropriety, under of color of law. It is a fact that pursuant Article I, Section 2, Applicant is entitled to the privileges and immunities of citizens in the other states. The Decision ignores that the Office, Europe and Japan have allowed selected other patents in the very same field not allowed here [Czirr(5,231,290), Westphal(5,215,631), Ahern(5,411,654), Patterson(5,036,031), (5,318,675), (5,372,688), (5,036,031); Aspden, UK-GB 2,231,195B].

These were cited in the Appeal Brief, but the Argument apparently missed.

89. As corroboratory proof of this 2 tiered treatment, The Wall Street Journal in January 29, 1996 wrote:

**"A bottle no bigger than a man's fist is creating an unusual stir among power generation engineers. The bottle is filled with ordinary water and microscopic palladium coated beads. When a little electric current trickles through the bottle, several hundred times as much power starts coming out in the form of heat - that is, if one cares to believe the instruments attached to the bottle. ... Yet supporters say**

something is going on inside the little heat producing bottle. As with the Utah apparatus, it's claimed that the bottle produces an excess of power as it electrolyzes, or breaks down, water molecules into hydrogen and oxygen atoms. But unlike the controversial and unpredictable Utah experiments, The Patterson cell can be turned on and off seemingly at will. Several working devices built by Dr. Patterson have been made available to two teams.

"This is the first time what we have a system that seems to work every time," says a nuclear chemist who consults to utilities. The cell's reliability, which would allow scientists to manipulate it, "gives us our first chance to see if this [phenomenon] involves a nuclear reaction," he explains.

"Moreover, the U.S. Patent and Trademark Office, which has flatly said that cold fusion, like perpetual motion, is impossible and unpatentable, has issued a patent on the gadget."

[JERRY E. BISHOP, The Wall Street Journal, January 29, 1996, underline added for emphasis]

90. The Decision is inconsistent with the reasoning of the Supreme Court in *United States v. Nixon* (1974) that all are "equal under the law". There are two different standards of review. Therefore, this is a dual-tiered system. No such demand was made of these other patents.

The Office unfairly demonstrates two standards of review proving discrimination.

## **POINT 29: The Decision May Have the Appearance of Impropriety**

91. If it stands unchanged the Decision condones, and is misprision, of wrongdoing. The Office has systematically used false statements on federal documents in place of its burden, which shifted back to the Office and can only be discharged by the Examiner "presenting evidence or reasons why persons skilled-in-the-art would not recognize in the disclosure a description of the invention defined by the claims" [Wertheim, 541 F.2d at 263, 191 USPQ at 97]. As such the Decision is arbitrary, selective, capricious, and is discriminatory with obvious civil right violations under color of law [U. S. v. Price, 86 S. Ct. 1152, 1157; 5Th Amendment and 14th Amendment; also "equal protection" clauses in *Frontiero v. Richardson*, 93 S.Ct. 1736, 411 U.S. 677; *Weiss v. Weiss*, 436 N.Y.S. 2d. 862, 52 N.Y. 2d. 170 (1981)], with serious implications [Gass v. Lopez, 95 S. Ct 729; *Wood v. Strickland*, 95 S Ct 952; *U.S. v. Price*, 86 S Ct 1152, 1157, Footnote 7; *Griffin v. Breckenridge*, 91 S Ct 179D; *Gamez v. Toledo*, 42 U.S.C. §1983, and *Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics*]. By contrast, the Appellant notes that the U.S. Supreme Court has ruled that any *pro se* litigant is entitled to less stringent standards [U.S. Rep volume 404, pages 520-521 (72)].

The Decision should have remonished and sanctioned the Examiner, for his systematically failing to address the Evidence (and docket it, too, apparently) and substituting for it his own fabricated false statements.

The Ahern Declaration states,

**"In discussions, Mr. Palabrica implied that if I removed all references to palladium and heavy water that a successive patent application would be allowed. Mr. Palabrica said that a new filing without the words 'fusion', 'palladium' and 'heavy water' would have a much better chance of moving forward. This was an odd request by Mr. Palabrica because to compliance to his demand would have made a second filing useless by removing the very materials used. Be-cause Mr. Palabrica apparently has the power to decide what an inventor's tech-nology would be, I gave up in frustration even though I believed, and continue to believe, that the technology was sound. "**

**"I am the inventor of over 20 patents, and have never experienced such a re-sponse from any Examiner before, like I have from Mr. Palabrica. Mr. Palab-rica's response was inappropriate for a Patent Examiner. The comments in-volve attempting to change an invention by overstepping his directives and act-ing as a 'protector' of scientific knowledge."**

**"The Applicant, Dr. Mitchell Swartz appears to be laboring under the same mis-use of authority.**

### **POINT 30: The Decision overlooked Evidence of Operability and Utility**

92. The Decision has overlooked Evidence proving the Appellant's invention as disclosed is operative, as documented by peer-reviewed published papers in authoritative scientific journals, by open demonstrations at MIT and elsewhere, and by Declarations.

#1) The Decision has overlooked ignored, un rebutted Declarations from scientists of ordinary skill-in-the-art, who considered the specification and stated that the written description was sufficient. They prove that the present invention solves a long-standing problem of operability and has utility. Applicant is acknowledged by those involved in the state-of-the-art. Said evidence shows that the Office's position is in error. Applicant has undertaken the full burden coming forward with his evidence as required [In re Oetiker, 977 F.2d at 1445, 24 USPQ2d at 1444].

#2) The Decision has overlooked and misapprehended the extent of Evidence and testimony and data regarding Applicant's open demonstration at MIT and before many witnesses.

#3) The Decision has overlooked ignored, un rebutted published peer-reviewed scientific articles about Appellant's inventions, and that the Applicant has undertaken the full burden coming forward with his evidence as required [In re Oetiker, 977 F.2d at 1445, 24 USPQ2d at 1444]. These include Swartz. M., "Excess Heat from Low Electrical Conductivity Heavy Water Spiral-Wound Pd/D<sub>2</sub>O/Pt and Pd/D<sub>2</sub>O-PdCl<sub>2</sub>/Pt Devices", Condensed Matter Nuclear Science, Proceedings of ICCF-10, eds. Peter L. Hagelstein, Scott, R. Chubb, World Scientific Publishing, NJ, ISBN 981-256-564-6, Pages 29-44; 45-54, and 213-226 (2006); and Swartz, M.R. "Survey of the Observed Excess Energy and Emissions In Lattice Assisted Nuclear Reactions", Journal of Scientific Exploration, 23, 4, 419-436 (2009); and Swartz, 1998, Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes, Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85 and Swartz(92, 94A, 97A, 97C)].

Either #1 or #2 or #3 are sufficient to demonstrate that the specification provides an adequately written description of the subject matter, including how to operate the invention, so that an artisan, or those skilled-in-the-art, could practice it without undue experimentation. Either #1 or #2 or #3 prove that enablement, utility, and validation. Together, #1 and #2 and #3 corroborate operability, utility and therefore enablement of the present invention both *de facto* and *de jure*.

### **POINT 31: The Decision Misapprehends That The PaTENT sHOULD BE iSSUED**

93. The Decision has overlooked that the figures in the submitted application (ignored by the Examiner), and the submitted peer-reviewed publications, and the submitted Declarations prove Applicant was correct on the filing date of the application. They prove that the Applicant wrote an adequate enabling disclosure, and thus complied and conformed with 35U.S.C.§112, first paragraph, of the Patent Act.

94. The Decision has overlooked that the Applicant taught an adequate enabling disclosure, with specification and drawings which even though never discussed by the Examiner or the Board with precision, did set forth the best mode contemplated by the inventor for carrying out the invention as described by the above-entitled application which enable any person skilled in the art to make and use the subject matter as defined by each of the claims, and thus complied and conformed with 35U.S.C.§112, first paragraph, of the Patent Act.

95. The Decision has overlooked that the PTO has granted such patents to several others, just as they are granted around the world. The US PTO has issued "cold fusion" patents to the Air Force (Dr. Ahern), Dr. Patterson and the US Navy (Dr. Miles), for example. The Board should consider that other countries, eg. Japan and Australia (see Exhibit Q [Appendix 15] for the Stringham patent which was just received) act similarly. The implication is that the Decision is unfair and heralds indelible discrimination by the Board.

96. The Decision has overlooked that the above-entitled invention is not "F+P" but is different, using the teachings of the original specification and claims. The Office should issue the patent. The figures and claims of the cited art are intended to, and do, serve a different purpose than does the cited segue art.

97. The Decision has overlooked that after years of requests, the Office has provided no reason, foundation, or basis to support its use of F+P to harass the Applicant for other inventions which F+P never imagined.


98. The Decision has overlooked that the PTO has provided no reason for its removing Evidence (Declarations and Forms 1440 [Exhibit "C" in this case) from the docket before the Board of Patent Appeals.

99. The Decision has overlooked that the subject has drawn a reaction historically similar to treating baldness which was once considered by the Office to also to be an inherently unbelievable undertaking. Since then, treatments for baldness have gained acceptance with minoxidil and other materials now recognized.

100. The Decision has overlooked that the U.S. Supreme Court has ruled that any *pro se* litigant is entitled to less stringent standards [U.S. Rep volume 404, pages 520-521 (72)].

The Appellant respectfully requests that the Board for Patent Appeals and Interferences should take a moment and closely reconsider the Evidence, the Appellant's pro se status, and in accordance with the foregoing arguments and cited Declarations and peer-reviewed publications, note that Appellant has conformed with the requirements of sections 112 of the Patent Act, and reversal of the rejection of all claims, is respectfully requested, as required by the statute (35 USC 112) because the specification and all claims are compliant under 35 U.S.C. 112, first paragraph, and because said claims contain subject matter which was described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention, and because there is a written description in the specification able to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, toward possession of the claimed invention. The compliance with 35 U.S.C. 101 is obvious from the agencies that are interested in this field and invention, and the fact that Declarants confirm that utility.

Respectfully submitted,  
December 31, 2010

  
\_\_\_\_\_  
Mitchell Swartz, ScD, MD, EE  
Weston, Mass.

**CERTIFICATE OF MAILING [37 CFR 1.8(a)]**

December 31, 2010

To Whom it Does Concern:

I hereby certify that this correspondence will be deposited with the United States Postal Service by First Class Mail, postage prepaid, in an envelope addressed to

**Board of Patent Appeals and Interferences**


Box 1450

Alexandria, VA 22313-1450 on the date below.

Thank you.

Sincerely,

December 31, 2010

  
\_\_\_\_\_  
M.R. Swartz  
Weston, MA 02493





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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,143	08/23/2003	Mitchell R. Swartz		8929

7590  
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11/01/2010

EXAMINER
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PAPER

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Defense Intelligence Agency

## Defense Analysis Report

DIA-08-0911-003

13 November 2009

### Technology Forecast: Worldwide Research on Low-Energy Nuclear Reactions Increasing and Gaining Acceptance

*Scientists worldwide have been quietly investigating low-energy nuclear reactions (LENR) for the past 20 years. Researchers in this controversial field are now claiming paradigm-shifting results, including generation of large amounts of excess heat, nuclear activity and transmutation of elements.<sup>1,2,3</sup> Although no current theory exists to explain all the reported phenomena, some scientists now believe quantum-level nuclear reactions may be occurring. DIA assesses with high confidence that if LENR can produce nuclear-origin energy at room temperatures, this disruptive technology could revolutionize energy production and storage, since nuclear reactions release millions of times more energy per unit mass than do any known chemical fuel.<sup>4,5</sup>*

#### Background

In 1989, Martin Fleischmann and Stanley Pons announced that their electrochemical experiments had produced excess energy under standard temperature and pressure conditions.<sup>6</sup> Because they could not explain this physical phenomenon based on known chemical reactions, they suggested the excess heat could be nuclear in origin. However, their experiments did not show the radiation or radioactivity expected from a nuclear reaction. Many researchers attempted to replicate the results and failed. As a result, the physics community disparaged their work as lacking credibility, and the press mistakenly dubbed it "cold fusion." Related research also suffered from the negative publicity of cold fusion for the past 20 years, but many scientists believed something important was occurring and continued their research with little or no visibility. For years, scientists were intrigued by the possibility of producing large amounts of clean energy through LENR, and now this research has begun to be accepted in the scientific community as reproducible and legitimate.

#### Source Summary Statement

This assessment is based on analysis of a wide body of intelligence reporting, most of which is open source information including scientific briefings, peer-reviewed technical journals, international scientific conference proceedings, interviews with scientific experts and technical media. While there is little classified data on this topic due to the S&T nature of the information and the lack of collection, DIA judges that these open sources generally provide the most reliable intelligence available on this topic. The information in this report has been corroborated and reviewed by U.S. technology experts who are familiar with the data and the international scientists involved in this work.

Although much skepticism remains, LENR programs are receiving increased support worldwide, including state sponsorship and funding from major corporations.<sup>7,8,9,10</sup> DIA assesses that Japan and Italy are leaders in the field, although Russia, China, Israel, and India<sup>11</sup> are devoting significant resources to this work in the hope of finding a new clean

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energy source. Scientists worldwide have been reporting anomalous excess heat production, as well as evidence of nuclear particles<sup>12, 13, 14</sup> and transmutation.<sup>15, 16, 17</sup>

- Y. Iwamura<sup>18</sup> at Japan's Mitsubishi Heavy Industries first detected transmutation of elements when permeating deuterium through palladium metal in 2002.
- Researchers led by Y. Arata at Osaka University in Japan<sup>19</sup> and a team led by V. Violante at ENEA in Italy (the Italian National Agency for New Technologies, Energy, and the Environment—the equivalent to the U.S. Department of Energy)<sup>20</sup> also made transmutation claims.
- Additional indications of transmutation have been reported in China, Russia, France, Ukraine, and the United States.<sup>21, 22</sup>
- Researchers in Japan, Italy, Israel, and the United States have all reported detecting evidence of nuclear particle emissions.<sup>23, 24</sup>
- Chinese researchers described LENR experiments in 1991 that generated so much heat that they caused an explosion that was not believed to be chemical in origin.<sup>25</sup>
- Japanese, French, and U.S. scientists also have reported rapid, high-energy LENR releases leading to laboratory explosions, according to scientific journal articles from 1992 to 2009.<sup>26, 27</sup>
- Israeli scientists reported in 2008 that they have applied pulsating electrical currents to their LENR experiments to increase the excess energy production.<sup>28</sup>
- As of January 2008, India was reportedly considering restarting its LENR program after 14 years of dormancy.<sup>29</sup>

U.S. LENR researchers also have reported results that support the phenomena of anomalous heat, nuclear particle production, and transmutation.<sup>30, 31, 32</sup>

- At the March 2009 American Chemical Society annual meeting, researchers at U.S. Navy SPAWAR Pacific reported excess energy,<sup>33</sup> nuclear particles,<sup>34</sup> and transmutation,<sup>35, 36</sup> stating that these effects were probably the result of nuclear reactions.<sup>37</sup>
- A research team at the U.S. company SRI International has been studying the electrochemistry and kinetics of LENR since the early 1990's, reporting excess heat and helium production.<sup>38</sup>

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- In May 2002, researchers at JET Thermal in Massachusetts reported excess heat and optimal operating points for LENR manifolds.<sup>39</sup>
- Researchers at the China Lake Naval Air Warfare Center in California first reported anomalous power correlated with Helium-4 production in 1996.<sup>40</sup>

Although no one theory currently exists to explain all the observed LENR phenomena, some scientists now believe these nuclear reactions may be small-scale deuterium fusion occurring in a palladium metal lattice.<sup>41, 42, 43</sup> Some others still believe the heat evolution can be explained by non-nuclear means. Another possibility is that LENR may involve an intricate combination of fusion and fission triggered by unique chemical and physical configurations on a nanoscale level.<sup>44, 45</sup> **This body of research has produced evidence that nuclear reactions may be occurring under conditions not previously believed possible.** Recent results suggest these anomalous LENR phenomena can be triggered by various energetic stimuli (electric and magnetic fields, acoustic waves, infrared, lasers)<sup>46</sup> and may have a variety of operational modes.<sup>47</sup>

### Nuclear Fusion

Nuclear fusion as currently understood occurs only in the core of stars, in nuclear weapons, in high temperature plasmas, or in inertially confined high-energy collisions. Scientists for years have attempted to harness nuclear fusion through high-temperature plasma techniques but have been unable to produce more energy output than supplied. Fusion was once thought to be the answer to the world's future clean energy needs, but after 60 years of research still has yet to live up to this promise. "Hot" fusion researchers do not believe fusion can occur at near-room temperatures based on the Coulomb barrier that repels like nuclear charges and have dismissed much of the "cold fusion" research conducted since 1989. As a result, such research has received limited funding and support over the past 20 years.

### Potential Applications of LENR: The Technology Surprise Factor

LENR's potential as a future clean energy source is still unknown. However, recent results indicating nuclear activity and transmutation are intriguing and pose the following questions:

- If the excess heat from these experiments could be captured and intensified, could LENR be used as a power source for engines, batteries, or other equipment?
- If nuclear particles could be generated and transmute elements, could LENR be used to mitigate hazardous waste or to neutralize weapons of mass destruction?<sup>48</sup>
- If the various modes of energy production could be identified and optimized, could LENR be used to create designer materials or critical resources that are in short supply or serve as a tailored, "dial-a-mode" power source?

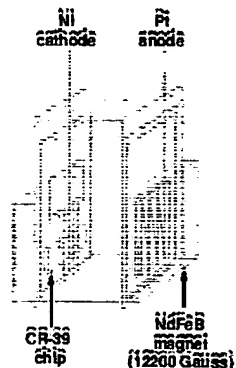
## UNCLASSIFIED

- If rapid, explosive energy output can occur in one or several modes, could LENR serve as a new high-energy-density explosive?

International LENR research was highlighted in April 2009 on a U.S. television program focused on the 20th anniversary of the Fleischman and Pons announcement.<sup>49</sup> Many U.S. researchers are collaborating with foreign scientists, but each team has proprietary aspects of their experiments that are not shared. Because some peer-reviewed journals are reluctant to review or publish LENR data due to past controversies, most results are presented at international conferences, and foreign scientists have access to much of the U.S. data. In addition, U.S. experts have been invited to brief on LENR to nuclear institutes in India,<sup>50</sup> Belgium,<sup>51</sup> and South Korea,<sup>52</sup> and a reciprocal visit by South Koreans to SPAWAR Pacific to initiate collaboration is planned. This relatively free flow of information increases the likelihood of a technology breakthrough—as well as the potential for technology surprise—by an international team, especially those from countries that are devoting more resources to this research than is the United States, and are supported with major corporate funding (Mitsubishi, Toyota, and Honda in Japan; Pirelli in Italy).<sup>53</sup>

### The Experiments

Most LENR experiments involve electrodes immersed in solutions of metal salts such as lithium chloride or lithium sulfate, with heavy water substituted for natural water. Electric current is sent through the experimental apparatus, in most instances producing excess heat. This effect occurs over long periods (several hundreds of hours), and many early experimenters achieved negative results because they were unaware of this incubation period. Israeli researchers used pulsating electric fields to increase heat production. The application of magnetic fields has been shown to stimulate increased heat and power. Usually one of the electrodes is palladium, because it has a high ability to adsorb (hold on the surface) and absorb deuterium atoms in its metal matrix. Deuterium is an isotope of hydrogen that undergoes fusion in nuclear weapons at high temperatures and pressures; it also undergoes fusion and is one of the basic building blocks of the heavier elements formed in stars. The Navy SPAWAR experiments used a unique technique to place the palladium atoms in the heavy-water solution and to codeposit palladium and deuterium, which rapidly increases the deuterium "loading" necessary for the LENR phenomena to occur.



A Notional LENR Electrochemical Cell (Left) and a French LENR Apparatus After an Unexplained Explosion (Right)<sup>54</sup>

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### Who's Hot in Cold Fusion?

The countries with the most advanced LENR programs are Japan, Italy, and Israel. In addition, Russia, France, China, South Korea, and India are spending significant resources on LENR research. The following are among the most notable efforts:

- In Japan, Iwamura at Mitsubishi has been studying transmutation of elements in LENR experiments and multilayer palladium (Pd) complexes. His team includes the Japanese Synchrotron Radiation Research Institute and SPring-8 at Riken. Kitamura and other researchers at Kobe University are investigating Pd nanopowders and Helium-4 ash. Arata at Mitsubishi Heavy Industries has worked on catalysts containing nanopalladium. Yamaguchi at Kobe noted transmutation using multilayered Pd samples. Mizuno at Hokkaido is studying transmutations and heat generation. A team led by Hioki at Toyota is investigating deuterium gas permeation through Pd as well as transmutations. Toriyabe at Tohoku University is developing charged-particle detectors for LENR. Kasagi is looking at electron and ionic screening in LENR effects.
- Vittorio Violante, a leader in the field of Pd metallurgy and the role of surface effects in LENR, heads a team at ENEA, Frascati Rome, (the Italian equivalent to the U.S. Department of Energy) performing LENR experiments. A team led by Francesco Celani at INFN that includes STMicroelectronics and Pirelli labs is studying deuterium migration in nanocoated Pd for fast-loading and anomalous heat effects. The Italian Physical and Chemical Societies are supporting LENR research in Italy.
- Srinivasan in India noted that India is restarting its LENR program: the Bhabha Atomic Research Centre had several groups working on LENR from 1989 to the early 1990s. Sinha at IISc in Bangalore is studying models for fusion in metal deuterides. Lakshminan at Saveetha College is exploring fusion in sodium metal solutions.
- Andrei Lipson and other researchers at the Russian Academy of Sciences and scientists in Tomsk are studying the emission of charged particles during the use of electron beams to excite palladium/deuterium (Pd/D) and titanium/deuterium (Ti/D) targets. Karabut and others at LUCH also are conducting LENR experiments. A Dubna team led by Gareev is studying nuclear fusion during cavitation and molecular transitions. LUCH's Savvatimova, Dash, Muromtsev, and Artamonov also are conducting LENR experiments. Adamenko and Vysotskii of Kiev are looking for magnetic monopoles in LENR experiments. Kurchatov-based scientist Goryachev is investigating LENR for alternative energy sources and for mitigating radioactive waste.
- Xing Z. Li at Tsinghua University claims 20 institutions in China are investigating LENR with governmental support. Tian's team at Caohui University of Science and Technology is investigating laser triggering in Pd/D systems. Zhang and other researchers at the Chinese Academy of Sciences have studied Pd-D kinetics in LENR since 1991.
- Israeli scientists at Energetics in Omer have shown that variations in energy output can be increased using variable frequency or pulsed "superwaves" to stimulate LENR effects.
- The French Atomic Energy Agency had an official LENR program from 1997 to 1999. EDF also had one for several years. Currently, Jean-Paul Biberian from the Universite Marseille and Jacques Dufour at CNAM are working on LENR in France.
- Jan Marwan of Dr. Marwan Chemie in Berlin, Germany, is studying the nanostructure of palladium hydride systems. Huke and others from the Technische Universitat Berlin are working with Czerski in Poland and Ruprecht in Canada on electron screening mechanisms for deuterium fusion.

## Outlook and Implications

If nuclear reactions in LENR experiments are real and controllable, DIA assesses that whoever produces the first commercialized LENR power source could revolutionize energy production and storage for the future. The potential applications of this phenomenon, if commercialized, are unlimited. The anomalous LENR effects seen in these metal lattices containing deuterium may also have as-yet undetermined nanotechnology implications. LENR could serve as a power source for batteries that could last for decades, providing power for electricity, sensors, military operations, and other applications in remote areas, including space. LENR could also have medical applications for disease treatment, pacemakers, or other equipment. Because nuclear fusion releases **10 million times more energy per unit mass** than does liquid transportation fuel, the military potential of such high-energy-density power sources is enormous. And since the U.S. military is the largest user of liquid fuel for transportation, LENR power sources could produce the greatest transformation of the battlefield for U.S. forces since the transition from horsepower to gasoline power.

Prepared by: Beverly Barnhart, DIA/DI, Defense Warning Office. With contributions from: Dr. Patrick McDaniel, University of New Mexico; Dr. Pam Mosier-Boss, U.S. Navy SPAWAR/Pacific; Dr. Michael McKubre, SRI International; Mr. Lawrence Forsley, JWK International; and Dr. Louis DeChiaro, NSWC/Dahlgren.

Coordinated with DIA/DRI, CPT, DWO, DOE/IN, US Navy SPAWAR/Pacific and U.S. NSWC/Dahlgren, VA.

<sup>1</sup> Boekris, John. "The History of the Discovery of Transmutation at Texas A&M University," paper presented at the 10<sup>th</sup> International Conference on Cold Fusion (ICCF), Cambridge, MA, 2003.

<sup>2</sup> 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.

<sup>3</sup> The number of protons in the nucleus of an atom determines the identity of the chemical element. Nuclear transmutation occurs when the number of protons in the nucleus is changed by adding or removing protons or converting them to other nuclear particles. Thus transmutation changes one chemical element into another through a nuclear process.

<sup>4</sup> Benedict, M., T. Pigford, and H. Levi. "Nuclear Chemical Engineering," McGraw Hill Series in Nuclear Engineering, 1981.

<sup>5</sup> Hecker, S., "Plutonium: A Historical Overview," *Challenges in Plutonium Science*, Vol. 1, Los Alamos, National Laboratory, No. 26, 2000.

<sup>6</sup> Journal of Electroanalytical Chemistry, Vol. 261, 263, 287, pp 187, 301, 293.

<sup>7</sup> DeChiaro, Louis. "Recent Progress in Low Energy Nuclear Reactions," briefing prepared by NAVSEA, Dahlgren, for DDR&E, 28 August, 2009.

<sup>8</sup> Iwamura, Yashiro, et al., "Transmutation Reactions Induced by D<sub>2</sub> Gas Permeation Through Pd Complexes (Pd/CaO/Pd)," 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.

<sup>9</sup> Hioki, Tatsumi, et al., "Influence of Deuterium Gas Permeation on Surface Elemental Change of Ion-Implanted Pd," 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.

<sup>10</sup> Celani, Francesco, et al., "Deuteron Electromigration in Thin Pd Wires Coated with Nano-Particles: Evidence for Ultra-Fast Deuterium Loading and Anomalous, Large Thermal Effects," 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.



- <sup>11</sup> "Exiting New Science: Potential Clean Energy." Abstracts. 14<sup>th</sup> International Conference on Condensed Matter Nuclear Science and International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>12</sup> Mosier-Boss, et al. "Triple Tracks in CR-39 as the Result of Pd/D Co-deposition: Evidence of Energetic Neutrons." *Naturwissenschaften*, 96, 2009, 135-142.
- <sup>13</sup> Mosier-Boss, et al., Navy SPAWAR briefing, American Chemical Society annual meeting, March 2009.
- <sup>14</sup> "Exiting New Science: Potential Clean Energy." Abstracts. 14<sup>th</sup> International Conference on Condensed Matter Nuclear Science and International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>15</sup> Transmutations only occur when nuclear particles interact and are exchanged to produce different elements.
- <sup>16</sup> Iwamura, Yoshiro, et al., "Transmutation Reactions Induced by D<sub>2</sub> Gas Permeation Through Pd Complexes (Pd/CaO/Pd) 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>17</sup> Yamaguchi, Tatsuya, et al., "Investigation of Nuclear Transmutation Using Multilayered CaO/X/Pd Samples Under Deuterium Permeation." 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>18</sup> Iwamura, Yoshiro, et al., "Elemental Analysis of Pd Complexes: Effects of D<sub>2</sub> Gas Permeation." *Japan Journal of Applied Physics*, Vol 41, 2002, pp. 4642-4650.
- <sup>19</sup> Arata, Y., "Anomalous Effects in Charging of Pd Powders with High Density Hydrogen Isotopes." *Physics Letters A*, 373, 2009, pp 3109-3112.
- <sup>20</sup> Violante, V. et al., "On the Correlation of PdD Alloy Material Properties with the Occurrence of Excess Power," briefing presented at 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>21</sup> Prelas, M.A., et al., "A review of Transmutation and Clustering in Low Energy Nuclear Reactions," briefing presented at Vice Chancellor for Research Seminar on LENR, University of Missouri, May 2009.
- <sup>22</sup> Briefings presented at Navy SPAWAR San Diego, LENR meeting, 4-5 August, 2009.
- <sup>23</sup> Mosier-Boss, et al. "Triple Tracks in CR-39 as the Result of Pd/D Co-deposition: Evidence of Energetic Neutrons." *Naturwissenschaften*, 96, 2009, 135-142.
- <sup>24</sup> Mizuno, Tadahiko, "Neutron Emission Induced by Nuclear Reaction in Condensed Matter," briefing presented at Vice Chancellor for Research Seminar on LENR, University of Missouri, May 2009.
- <sup>25</sup> Zhang, et al., "On the Explosion in a Deuterium/Palladium Electrolytic System," Third International conference on Cold Fusion, 1992, Nagoya, Japan.
- <sup>26</sup> Biberian, Jean-Paul, "Unexplained Explosion During an Electrolysis Experiment in an Open Cell Mass flow Calorimeter." *Journal of Condensed Matter, Nuclear Science*, 2 (2009) pp. 1-6.
- <sup>27</sup> Zhang, et al., "On the Explosion in a Deuterium/Palladium electrolytic System," Third International conference on Cold Fusion, 1992, Nagoya, Japan.
- <sup>28</sup> Lesin, et al., "Ultrasonically-Excited Electrolysis Experiments at Energetic Technologies," Energetics Technologies, Omer, Israel, briefing presented at 14<sup>th</sup> International Conference on Cold Fusion (ICCF), Washington, DC, 10-15 August 2008.
- <sup>29</sup> Jayaraman, K.S., "Cold Fusion is Hot Again." *Nature India*, 2008. Published online 17 Jan 2008. <http://www.lenr-canr.org/aerobat/JayaramanKcoldfusion.pdf>
- <sup>30</sup> Mosier-Boss, et al., multiple briefings presented at Navy SPAWAR Pacific, August 4-5, 2009.
- <sup>31</sup> McKubre, Michael, "Studies of the Fleischmann-Pons Effect at SRI International," briefing presented at Vice Chancellor for Research Seminar on LENR, University of Missouri, May 2009.
- <sup>32</sup> Szpak, Stan, et al., "Evidence of Nuclear Reactions in the Pd Lattice." *Naturwissenschaften*, 92, 2005, 394-397.
- <sup>33</sup> Szpak, Stan, et al., "Thermal Behavior of Polarized Pd/D Electrodes Prepared by Co-Deposition." *Thermochimica Acta*, 410, 2004, 161-167.
- <sup>34</sup> Mosier-Boss, et al., "Triple Tracks in CR-39 as the Result of Pd/D Co-deposition: Evidence of Energetic Neutrons." *Naturwissenschaften*, 96, 2009, 135-142.
- <sup>35</sup> Szpak, Stan, et al., "Evidence of Nuclear Reactions in the Pd Lattice." *Naturwissenschaften*, 92, 2005, 394-397.
- <sup>36</sup> The identity of a chemical element is determined by the number of protons in its atomic nucleus. Transmutation occurs when one chemical element is changed into another one. This normally occurs during radioactive decay, but can occur from any number of nuclear processes that add or subtract protons from the atomic nucleus.
- <sup>37</sup> Mosier-Boss, et al., Navy SPAWAR briefing, American Chemical Society annual meeting, March 2009.
- <sup>38</sup> McKubre, Michael, "Studies of the Fleischmann-Pons Effect at SRI International," briefing presented at Vice Chancellor for Research Seminar: Excess Heat and Particle Tracks from Deuterium-Loaded Palladium, University of Missouri, 29 May 2009.



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- <sup>38</sup> Swartz, Mitchell, et al.: "The Impact of Heavy Water (D<sub>2</sub>O) on Nickel-Light Water Cold Fusion Systems." Proceedings of the 9<sup>th</sup> International Conference on Cold Fusion, ICCF-9, Condensed Matter Nuclear Science, May 19-24, 2002, Beijing, China, Tsinghua University Press, 2003, pp 335-342.
- <sup>39</sup> Miles, Melvin, et al.: "Anomalous Effects in Deuterated Systems." Final Report, NAWCWPNS TP 8302, Naval Air Warfare Center Weapons Division, 1996.
- <sup>40</sup> Hagelstein, Peter and Irfan Chaudhary: "Modeling Excess Heat in the Fleischmann-Pons Experiment," briefing presented at Vice Chancellor for Research Seminar on LENR, University of Missouri, May 2009.
- <sup>41</sup> Olenik, V.P. and Yu. D. Arepjev: "Physical Mechanism of Nuclear Reactions at Low Energies." National Technical University of Ukraine, Kiev Polytechnic Institute
- <sup>42</sup> Srivastava, Y.N.; O. Panella, A. Widom: "Instability of the Perturbation Theoretical Chromodynamic Vacuum." LANL web site, arXiv:0811.3293v1 20 Nov 2008.
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- <sup>44</sup> McDaniel, Patrick, "Electrochemically Induced Nuclear Reactions," briefing, presented at Navy SPAWAR Pacific, August 2009.
- <sup>45</sup> Sinha, K.P. and A.Meulenbergh: "Laser Stimulation of Low-Energy Nuclear Reactions in Deuterated Palladium." Current Science, Vol.91, No.7, 10 October, 2006, pp. 907-912
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- <sup>47</sup> Tsvetkov, S.A.: "Possibility of Using Cold Fusion for Nuclear Waste Products Transmutation." 10<sup>th</sup> International Conference on Cold Fusion, Cambridge, MA, 2003, from LENR-CANR.org website.
- <sup>48</sup> <http://www.ebsnews.com/stories/2009/04/17/60minutes/main4952167.shtml?tag=contentMain:contentBody>
- <sup>49</sup> Personal correspondence, Dr. Michael McKubre, SRI International, October, 2009.
- <sup>50</sup> Forsley, L.: "Lattice Assisted Nuclear Reactions: Overview of an Unexpected Phenomena." First Colloquium on Nano-Nuclear Science l'Universite catholique de Louvain, Belgium, May 4-5, 2009.
- <sup>51</sup> Personal correspondence, Mr. Lawrence Forsley, FWK International, October, 2009.
- <sup>52</sup> In Japan, the three major automakers are supporting LENR research. In Italy, Pirelli Labs is one of many corporate and governmental sponsors of LENR research.
- <sup>53</sup> Biberian, Jean-Paul, "Unexplained Explosion During an Electrolysis Experiment in an Open Cell Mass flow Calorimeter." *Journal of Condensed Matter, Nuclear Science*, 2 (2009) pp. 1-6.

<b>FORM PTO-1440 (modified)</b> <b>LIST OF PATENTS AND</b> <b>PUBLICATIONS FOR APPLICANT'S</b> <b>INFORMATION DISCLOSURE</b> <b>STATEMENT</b>				<b>ATTY DOCKET NO:</b> Teach-1		<b>Serial no:</b>	
				<b>APPLICANT:</b> Dr. Mitchell Swartz			
				<b>FILING DATE:</b> 8/22/03		<b>GROUP:</b>	
<b>REFERENCE DESIGNATION</b>				<b>U.S. PATENT DOCUMENTS</b>			
<b>EXAMINER INITIAL</b>		<b>DOCUMENT NUMBER</b>	<b>DATE</b>	<b>NAME</b>	<b>CLASS</b>	<b>SUB CLASS</b>	<b>FILING DATE</b>
		SN:07/339,976		Swartz, M.R.			
		SN:09/750,480		Swartz, M.R.			
		SN:07/760,970; Continuation SN:09/750,765		Swartz, M.R.			
		SN:08/406,457		Swartz, M.R.			
<b>FOREIGN PATENT DOCUMENTS</b>							
<b>EXAMINER INITIAL</b>		<b>DOCUMENT NUMBER</b>	<b>DATE</b>	<b>COUNTRY</b>	<b>CLASS</b>	<b>SUB CLASS</b>	<b>TRANSLATION</b>
	AC	03199; Ber. 59 (1926)		German patent			
<b>OTHER ART (including Author, Title, Date, Pertinent Pages, Etc.)</b>							
	AR			Hansen, M.; Constitution of Binary Alloys; McGraw-Hill Book Co.; Inc.; 790-793; (1958).			
	AS			Uhlig, H.; Corrosion and Corrosion Control; Wiley (1971)			
	AT			"Quasi-One-Dimensional Model Of Electrochemical Loading Of Isotopic Fuel Into A Metal"; <i>Fusion Technology</i> ; 22; 296-300 (1992)			
	AU			"Isotopic Fuel Loading Coupled To Reactions At An Electrode"; <i>Fusion Technology</i> ; 26-4T; 74-77; (1994)			
	AV			"Consistency of the Biphasic Nature of Excess Enthalpy in Solid State Anomalous Phenomena with the Quasi-1-Dimensional Model of Isotope Loading into a Material"; <i>Fusion Technology</i> ; 31; 63-74 (1997)			
<b>EXAMINER:</b> Examiner:				<b>DATE CONSIDERED</b>			
<b>EXAMINER:</b> Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of form with next communication to applicant.							

<b>FORM PTO-1440 (modified)</b> <b>LIST OF PATENTS AND</b> <b>PUBLICATIONS FOR APPLICANT'S</b> <b>INFORMATION DISCLOSURE</b> <b>STATEMENT</b>				<b>ATTY DOCKET NO:</b> Teach-1		Serial no:	
				<b>APPLICANT:</b> Dr. Mitchell Swartz			
				<b>FILING DATE:</b> 8/22/03		<b>GROUP:</b>	
<b>REFERENCE DESIGNATION</b>				<b>U.S. PATENT DOCUMENTS</b>			
<b>EXAMINER</b> <b>INITIAL</b>		<b>DOCUMENT NUMBER</b>	<b>DATE</b>	<b>NAME</b>	<b>CLASS</b>	<b>SUB</b> <b>CLASS</b>	<b>FILING</b> <b>DATE</b>
<b>FOREIGN PATENT DOCUMENTS</b>							
<b>EXAMINER</b> <b>INITIAL</b>		<b>DOCUMENT NUMBER</b>	<b>DATE</b>	<b>COUNTRY</b>	<b>CLASS</b>	<b>SUB</b> <b>CLASS</b>	<b>TRANS</b> <b>LATION</b>
<b>OTHER ART (including Author, Title, Date, Pertinent Pages, Etc.)</b>							
	AR						Swartz, M.; "Codeposition Of Palladium And Deuterium"; Fusion Technology; 32: 126-130 (1997)
	AS						Swartz, M.; "Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes"; Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting; (ISSN:0003-018X publisher LaGrange, Ill) 78; 84-85
	AT						Patterns Of Failure In Cold Fusion Experiments; Proceedings of the 33RD Intersociety Engineering Conf. on Energy Conversion; IECEC-98-1229; (1998);
	AU						Swartz, M; "Optimal Operating Point Characteristics of Nickel Light Water Experiments"; Proceedings of ICCF-7; (1998);
	AV						"Control Of Low Energy Nuclear Systems Through Loading And Optimal Operating Point"; ANS/ 2000 International Winter Meeting; Nov: 12-17, 2000; Washington, D.C. (2000) Transactions
	AX						"The Impact of Heavy Water (D <sub>2</sub> O) on Nickel-Light Water Cold Fusion Systems"; Proceedings of the 9th International Conference on Cold Fusion (Condensed Matter Nuclear Science); Beijing, China; May 2002; edited by Xing Z. Li; pages 335-342;
<b>EXAMINER:</b> Examiner:				<b>DATE CONSIDERED</b>			
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				<b>FILING DATE:</b> 8/22/03		<b>GROUP:</b>	
<b>REFERENCE DESIGNATION</b>				<b>U.S. PATENT DOCUMENTS</b>			
<b>EXAMINER INITIAL</b>		<b>DOCUMENT NUMBER</b>	<b>DATE</b>	<b>NAME</b>	<b>CLASS</b>	<b>SUB CLASS</b>	<b>FILING DATE</b>
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<b>OTHER ART (including Author, Title, Date, Pertinent Pages, Etc.)</b>							
	AR						"Excess Heat from Low Electrical Conductivity Heavy Water Spiral-Wound Pd/D <sub>2</sub> O/Pt and Pd/D <sub>2</sub> O-PdCl <sub>2</sub> /Pt Devices" to be delivered 8/25/03 ICCF-10 (Camb.MA)
	AS						"Photoinduced Excess Heat from Laser-Irradiated Electrically-Polarized Palladium Cathodes in Heavy Water" to be delivered 8/27/03 ICCF-10 (Camb.MA)
	AT						
	AU						
	AV						
	AX						
	AY						
	AZ						
<b>EXAMINER:</b> Examiner:				<b>DATE CONSIDERED</b>			
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of form with next communication to applicant.							

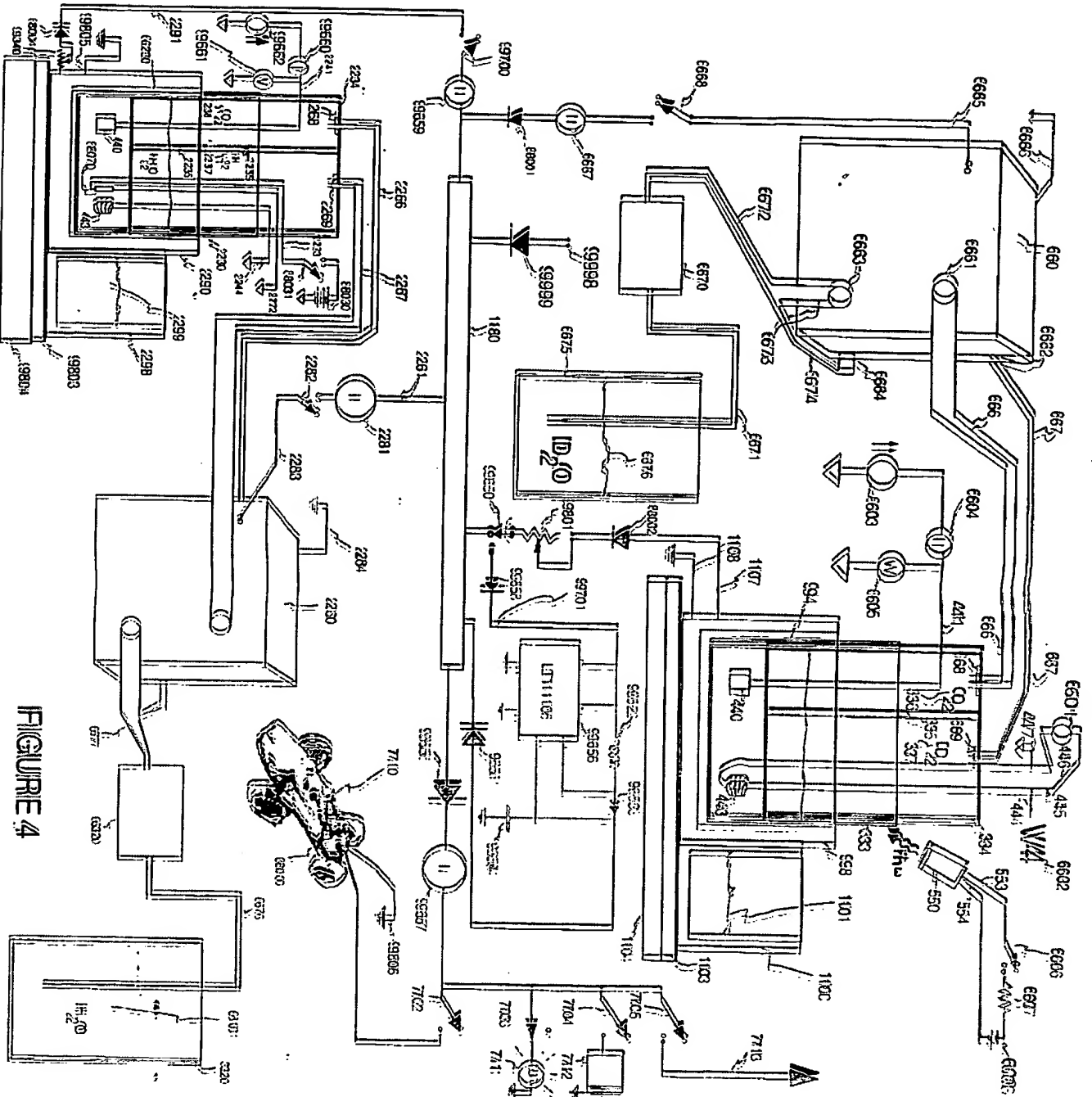


FIGURE 4

**UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Ex parte MITCHELL R. SWARTZ  
Appeal 2009-001853  
Application 10/646,143  
Technology Center 3600

For:  
APPARATUS TO PRODUCE AND STORE  
ELECTRICAL ENERGY FROM  
HYDROGEN-LOADED MATERIALS

Grp Art Unit: 3641

Examiner: Palabrica, R.J.

This is a continuation in part of Serial No: 07/ 339,976  
Filed: 04/18/1989

December 15, 2010

The Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**DECLARATION OF PROF. PETER HAGELSTEIN**

I, Peter Hagelstein, declare that I am a citizen of the United States of America.

1. My field of experience is theoretical, computational, and applied physics. I have taught at the Massachusetts Institute of Technology and led a research group that has focused on problems of atomic physics, plasma physics, x-ray lasers, and quantum optics.
2. I have closely followed, and participated in, the field of cold fusion since 1989.
3. The scientific results presented by Dr. Mitchell Swartz on his Phusor experiments, in which excess power and total energy is measured, looks very good. His results are competitive in terms of reproducibility and power gain with the

best results obtained by other groups around the world. The reproducible energy gains that he has reported are the highest so far reported by any group.

4. Swartz demonstrated his Phusor experiment at MIT in connection with ICCF10 in August 2003. Data from this experiment show significant excess heat. Swartz has demonstrated his Phusor experiment in his Weston laboratory, in Weston, MA numerous times for me and for others.
5. Water heaters that run on electricity from household wall plugs are currently sold to produce hot water in parts of the country where oil delivery and natural gas delivery are unavailable or inconvenient. Electricity in the Boston area costs near \$0.20/kW-hr, which seems very expensive. Swartz's Phusor experiments have shown energy gains at least up to 10x. A Phusor-based water heater with an energy gain of 10x would be competitive with existing water heaters. I would buy one if available.
6. No one in the field considers Swartz's Phusor experiment to be the same as what Fleischmann and Pons did, or what others have done. It is clearly an original experiment distinct from all that have come before. The USPTO is simply mistaken if they assert otherwise.
7. The specification of "low paramagnetic, low conductivity deuterium oxide, 99.99%, from Cambridge Isotope Laboratories, Andover MA" adequately specifies what is meant by pure heavy water in the context of Swartz's Phusor experiment. Assertions to the contrary in this case by the USPTO are incorrect.

8. Following the announcement of cold fusion by Fleischmann and Pons in 1989, many labs carried out experiments to see whether they could replicate the experiment. Unfortunately, important experimental details concerning the experiment were not available generally in 1989, and as a result, the large majority of these replication efforts failed. Subsequently, work at SRI and at other laboratories identified a number of experimental requirements for the Fleischmann-Pons experiment need to be satisfied for excess heat to be seen. These include: (a) Pd cathodes need to be highly loaded for 2-5 weeks prior to seeing excess heat. (b) The D/Pd loading needs to exceed 0.95 at some point during this 2-5 week period. (c) The D/Pd loading needs to exceed about 0.84 at the time for an excess heat event to be seen. (d) Excess heat is correlated in the Fleischmann-Pons experiment with interfacial deuterium flux. If we restrict ourselves to this subset of the SRI criteria, we find that none of the negative experiments published in 1989 and 1990 were done in regime where excess heat would have been expected. For example, the cathode loading in the experiments done at MIT did not reach 0.80. No cathode which loaded so poorly was observed to produce excess heat in any Fleischmann-Pons experiment in the SRI experiments. Therefore, D/Pd loading is very important, and monitoring it is of great utility.
9. I note that it becomes exponentially more difficult to achieve high D/Pd loadings above a loading of 0.70 near room temperature (due to the rapid increase in deuterium chemical potential). Hence, the achievement of a loading of 0.95 in the majority of replication experiments in 1989 and 1990, where no special effort was made to achieve high loading, and where the loading was not even measured in most of these experiments cited by the USPTO, would not be expected. The existence of such a requirement was not appreciated in 1989, except by Fleischmann, Pons, and a small number of other researchers.



10. The USPTO continues the tradition of assigning significance to these negative experiments, which were not done in the relevant parameter regime of high D/Pd loading. Thus, rather than showing that the Fleischmann-Pons experiment could not be replicated, these insufficiently loaded experiments should be understood as producing the expected negative result (no excess power) in those regimes where we would expect no excess power to be seen.
11. Today, D/Pd loading is known to be very important. There have been numerous peer-reviewed published papers that show positive excess heat results in replications of the Fleischmann-Pons experiment. If the USPTO have asserted otherwise, they are simply mistaken.
12. Since the USPTO refuses to recognize the existence of the effect, patents cannot be obtained on the associated technology. Because of this, funding to develop the technology is generally unavailable, or very nearly so, which hinders its development. By following its misguided policy in this area, the patent office impedes the development of technology that would address the energy problem, that would impact the availability of fresh water, and that could provide a real solution to the climate change issues the world faces. The development of this technology could have a real impact on national security, as the instability which results from the current situation regarding the finite availability of oil in less than friendly regions could be mitigated with the new energy source this technology promises. The development of a new energy technology in this area would be expected to provide jobs, which are badly needed at this time.
13. According to the USPTO website, the mission is described as: The USPTO mission is to ensure that the intellectual property system contributes to a strong global economy, encourages investment in innovation, and fosters entrepre-

neurial spirit. The USPTO promotes industrial and technological progress in the United States and strengthens the national economy by:

*"Administering the laws relating to patents and trademarks.*

*"Advising the Secretary of Commerce, the President of the United States, and the administration on patent, trademark, and copyright protection.*

*"Advising the Secretary of Commerce, the President of the United States, and the Administration on the trade-related aspects of intellectual property".*

In the general area of the Fleischmann-Pons effect, the USPTO accomplishes exactly the opposite of its mission. The global economy is faltering, and this technology could make a difference, but is not allowed to do so because of the USPTO. The USPTO hinders industrial and technological progress, since patents generally are not allowed, because there is little or no investments (because intellectual property cannot be protected). In general, the USPTO prevents progress through its actions, contrary to its mission statement.

14. I declare that all statements herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: December 15, 2010



Peter L Hagelstein  
MIT, Cambridge, MA

**UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Ex parte MITCHELL R. SWARTZ  
Appeal 2009-001853  
Application 10/646,143  
Technology Center 3600

For:  
APPARATUS TO PRODUCE AND STORE  
ELECTRICAL ENERGY FROM  
HYDROGEN-LOADED MATERIALS

Grp Art Unit: 3641

Examiner: Palabrica, R.J.

This is a continuation in part of Serial No: 07/ 339,976  
Filed: 04/18/1989

December 16, 2010

The Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**DECLARATION OF DR. BRIAN AHERN**

1. I, Brian Ahern, declare that I am a citizen of the United States of America.
2. I am an expert in material science, quantum chemistry and nanotechnology. I received my PhD in Materials Science from the Massachusetts Institute of Technology (Cambridge, MA) in 1984.
3. I served at USAF Rome Laboratory evaluating new material systems with potential importance for military applications, as a senior scientist in the Electromagnetic Materials Division. From 1985 until 1995 I was the U.S. representative to NATO Panel III on Electromagnetic Materials where my duties were to establish collaborations among scientists in the seven member countries.

4. In 1987 I was charged with the duty to survey the field of the new superconductors which were at first a great shock to experts in the field. I was selected for this work in part due to my M.S. thesis in the field of low temperature Physics. It is merely coincidental that my thesis topic was based on loading palladium alloys with hydrogen and deuterium and measuring the superconducting transition temperatures. My two year survey concluded that the theoretical underpinnings of superconduction were sadly lacking. The BCS theory was not only incapable of predicting the occurrence of the YBCO materials, it was incapable of making a priori predictions for any arrangement of matter. This observation regarding the lack of understanding in low temperature physics is not widely known. This lack of first principles level of understanding has been of little concern to experimentalists and has not discouraged extensive research support.
5. I sympathize with the Applicant, Dr. Mitchell Swartz. I can understand his frustration with one USPTO examiner, namely, Mr. Palabrica, who was an examiner for my filing of a patent application on an invention involving high energy density discharges and their intensification by high voltage pulses in liquids. For this invention, I drew on the vast experience of decades of exploding wire experiments and other high energy density studies. I based the invention on the same principle that is routinely observed in femtosecond laser-matter interactions. This invention was useful because energy could be extracted. My patent application was taken by Mr. Ricardo Palabrica.
6. The Examiner Mr. Palabrica denied my application and dismissed all of my claims on the grounds that he deemed that it was "cold fusion". My technology, my scientific explanations, and my arguments were summarily essentially ignored and dismissed by Mr. Palabrica, as he appeared to have pre-judged my technology and invention as part of the 'cold fusion' phenomenon. It was not. I

did not even use those words. I did not even use the word "fusion" in my filing. I did use the metal palladium and heavy water, but the similarities ended there.

7. In discussions, Mr. Palabrica implied that if I removed all references to palladium and heavy water that a successive patent application would be allowed. Mr. Palabrica said that a new filing without the words 'fusion', 'palladium' and 'heavy water' would have a much better chance of moving forward. This was an odd request by Mr. Palabrica because to compliance to his demand would have made a second filing useless by removing the very materials used. Because Mr. Palabrica apparently has the power to decide what an inventor's technology would be, I gave up in frustration even though I believed, and continue to believe, that the technology was sound.
8. I am the inventor of over 20 patents, and have never experienced such a response from any Examiner before, like I have from Mr. Palabrica. Mr. Palabrica's response was inappropriate for a Patent Examiner. The comments involve attempting to change an invention by overstepping his directives and acting as a 'protector' of scientific knowledge.
9. The Applicant, Dr. Mitchell Swartz appears to be laboring under the same misuse of authority.
10. I have known Mitchell Swartz since 1991. I would like to express my strong support for the work being conducted by Dr. Mitchell Swartz in the field of isotopic fuel loading of metal lattices and lattice assisted nuclear reactions. I believe his investigations are some of the most thorough and precise yet con-

ducted in isotopic loading and lattice assisted nuclear reactions, and that the thermal effects he is observing are real and will ultimately be useful on a large scale.

11. It is my professional as well as personal opinion that this field is real in spite of opinion of the Patent Office. The early lack of reproducibility combined with the unfortunate early claims of Pons and Fleischman have combined to discredit this entire area of investigation.

12. I declare that all statements herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: December 22, 2010

A handwritten signature in cursive script, reading "Brian Ahern", is written over a horizontal line.

Brian Ahern, PhD  
94 Houghton Lane  
Boxborough MA 01719

**UNITED STATES PATENT AND TRADEMARK OFFICE  
Board of Patent Appeals and Interferences  
Case 2009-1853**

**Appendix 14 (Exhibit "P")  
Review of Lattice Assisted Nuclear Reactions  
for the Board of Patent Appeals**

Mitchell Swartz, ScD, EE, MS, BS (MIT), MD (Harvard)

Two decades of LANR R&D have confirmed excess heat production, and other clearly nuclear phenomena, using electrolysis and other gas loading techniques. Requirements for success include incubation time, high loading of >90% PdDx, and other requisite conditions difficult to achieve. Several types of LANR now exist, as well as LANR metamaterials, and several types of triggering and control methods. In LANR, excess heat and helium-4 are the usual products, but charged particles, tritium, and the sequelae of neutrons can be sometimes detected. Excess power gains up to 200-400%+ (8000% with DAP-Phusor) have been reported. Given the prevalence of the fuel, and the incredible efficiency, LANR could be an important revolutionary technology. Lattice assisted nuclear reactions [LANR; refs. 1-44] enable deuterium fusion. It is incredibly clean and free of pollution, all toxic emissions, all carbon footprints, all greenhouse gases, and radioactivity, while obviating fossil fuel. The deuterium is plentiful in the oceans. But the problem with this new technology is that the first published LANR reaction involved the 1989 Pons-Fleischman (Drs. Martin Fleischmann (Southampton, UK) and Stanley Pons (Utah); P-F) experiment which was called "cold fusion" [1,2]. Before that, the term was originally introduced by Benjamin Franklin for fulgurites, created by atmospheric lightning discharging into sand. Rather than agglomerating sand, LANR's core is quite different, involving a metal, like palladium, loaded fully with heavy hydrogen [45-51], obtained either from deuterons from heavy water or gaseous deuterium.

Two decades of R&D, *sub rosa*, have investigated LANR phenomena ranging from excess heat production (far above the input), very low level but measurable emissions, thin films, and coupling to motors and electricity production systems. A few hundred credentialed scientists with diverse backgrounds continued to conduct careful experiments as they performed detailed data analyses using improved instrumentation, equipment, calibration, and controls. No single error or combination of errors on the part of all of the scientists can explain the developing results. They have been reported in over 3000 papers [55]. The Patent Office has acted wrongly.

LANR is consistent with conventional physics. The LANR-derived 'excess energy' begin at high energy, in the excited state of Helium, which is obtained from reactions between deuterons within the lattice. That helium-4 excited state is either the first excited state, or one energetically located above it, all at least 20 million electron volts (20 to ~23+ MeV) above the ground level. This is significant in magnitude and clearly not "low energy", as often (mis)claimed. As such purported "low energy nuclear reactions (LENR)" are a misnomer, a paradoxical description of what is actually not observed. Furthermore, if these are low energy reactions, why even bother? Fortunately, they are high energy reactions.

As the Hagelstein Declaration states,

**"Since the USPTO refuses to recognize the existence of the effect, patents can-not be obtained on the associated technology. Because of this, funding to de-velop the technology is generally unavailable, or very nearly so, which hinders its development. By following its misguided policy in this area, the patent of-fice impedes the development of technology that would address the energy problem, that would impact the availability of fresh water, and that could pro-vide a real solution to the climate change issues the world faces. The devel-opment of this technology could have a real impact on national security, as the instability which results from the current situation regarding the finite avail-ability of oil in less than friendly regions could be mitigated with the new en-ergy source this technology promises. The development of a new energy tech-nology in this area would be expected to provide jobs, which are badly needed at this time."**

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Today, LANR research involves electrolytic (with solution resistance ranging from conventional to 'high impedance' devices in the range of 200,000 ohms), gas loading, gas permeation, ion beam and glow discharge loading techniques and devices. They run in both open and closed systems, at pressures up to 10,000 psi, and driving motors, with on-line monitoring, redundant, high precision, time-resolved semiquantitative calorimetry. What has been learned? That LANR is real and generated in one of three different sites within the solid state, deuteron-loaded, metallic palladium lattice [42]. Each location has its own, differing, rate of excess heat, tritium, and helium production and appears to be linked to a different group of optimal operating point [OOP] manifolds characterizing active LANR samples and devices [39-44]. The fuel for LANR is the deuteron. It is driven into the metal by the applied electric field intensity or by gas pressure applied. In most cases, the product is an extraordinary amount of heat. Commensurate with the amount of excess heat is the "ash", usually de novo helium-4. The important point is that from those high energy levels of He4\* made in LANR come the observed excess energies in those difficult-to-achieve loaded lattice conditions, under some conditions. These reactions are complex, and under some conditions, tritium and other emissions result. Some of the variety of regions involved both within, and upon, the metallic lattice is shown in Figure 1 [42]. Like hot fusion, the keys are containment, time, and density, but with flux substituted for temperature [43,44,37,1,56, for example]. This first key for LANR is that the PdDx alloy must be driven, usually electrically, to extremely high loading, until it is filled and almost bursting like a sponge with water. The electrode must accept and maintain high loading for excess heat (>90%), for a sufficient incubation time, up to several hundred hours. Why? Vacancies must drift into the bulk from the surface, slightly facilitated by the loading itself [7, 56, 57, 58].

The additional keys for LANR are that there must be integrity of the loaded alloy; a condition difficult to achieve, although it is circumvented to some degree by the codeposition methods, albeit with their limitations [7,5]. As the lattice loads, it swells. Too much swelling yields irreversible failure, just like a swollen, burst, balloon. Another requirement is that deuteron flux must continue, within and through the already highly loaded lattice. LANR success is rewarded by "excess heat", which means that the energy producing reactions, have generated de novo helium into the lattice, (~1012 for every watt-second), and those conditions were adequate to enable energy transfer to the lattice. LANR success also means that significant energy (think,  $E=mc^2$  from the tiny difference between D2 and He4) is released rather than the low energy released by "burning" the deuterons into heavy water. There is more heat released than if the entire cathode were substituted for an equivalent quantity of TNT, but in this case it is safe, clean, and efficient.

The LANR method which P-F first taught in March 1989 had problems, including inefficient reproducibility, and a requirement for very high loading with long incubation time. This created havoc for those inexperienced in metallurgy, electrochemistry and physics.

As the Hagelstein Declaration states,

**"I note that it becomes exponentially more difficult to achieve high D/Pd loadings above a loading of 0.70 near room temperature (due to the rapid increase in deuterium chemical potential). Hence, the achievement of a loading of 0.95 in the majority of replication experiments in 1989 and 1990, where no special effort was made to achieve high loading, and where the loading was not even measured in most of these experiments cited by the USPTO, would not be expected. The existence of such a requirement was not appreciated in 1989, except by Fleischmann, Pons, and a small number of other researchers."**

**"The USPTO continues the tradition of assigning significance to these negative experiments, which were not done in the relevant parameter regime of high D/Pd loading. Thus, rather than showing that the Fleischmann-Pons experiment could not be replicated, these insufficiently loaded experiments should be understood as producing the expected negative result (no excess power) in those regimes where we would expect no excess power to be seen."**

As the Hagelstein Declaration states,

**"Following the announcement of cold fusion by Fleischmann and Pons in 1989, many labs carried out experiments to see whether they could replicate the experiment. Unfortunately, important experimental details concerning the experiment were not available generally in 1989, and as a result, the large majority of these replication efforts failed. Subsequently, work at SRI and at other laboratories identified a number of experimental requirements for the Fleischmann-Pons experiment need to be satisfied for excess heat to be seen. These include: (a) Pd cathodes need to be highly loaded for 2-5 weeks prior to seeing excess heat. (b) The D/Pd loading needs to exceed 0.95 at some point during this 2-5 week period. (c) The D/Pd loading needs to exceed about 0.84 at the time for an excess heat event to be seen. (d) Excess heat is correlated in the Fleischmann-Pons experiment with interfacial deuterium flux. If we restrict ourselves to this subset of the SRI criteria, we find that none of the negative experiments published in 1989 and 1990 were done in regime where excess heat would have been expected. For example, the cathode loading in the experiments done at MIT did not reach 0.80. No cathode which loaded so poorly was observed to produce excess heat in any Fleischmann-Pons experiment in the SRI experiments. Therefore, D/Pd loading is very important, and monitoring it is of great utility. "**

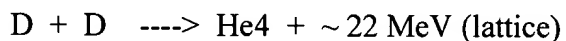
Today, briefly, there are several types of LANR; conventional (F+P), two types of codeposition (JET Energy, SPAWAR), dual cathode (Arata) systems, and a variety of other loading systems. On one hand, development for high power has led to today's high electrical solution resistivity LANR systems (very low levels of electrolysis yield superior excess heat levels pioneered by JET Energy) and then LANR metamaterials (JET Energy; 59). Metamaterials use shapes engineered to control deuteron flux, even at equilibrium, and even after loading, such as shown in Figure 2. The Phusor® spiral cathode system, with its open helical cylindrical geometry, in a high electrical resistance solution, creates a unique and unusual electric field distribution [59]. There is an anomalous effect in those portions of the cathode closest to the anode. This results in both deuteron loading flux from the solution to the electrode, and intra-palladium deuteron flux [59].

This configuration is a new kind of Pd/D<sub>2</sub>O/Pt and Pd/D<sub>2</sub>O/Au engineered LANR structure with impressive energy gain and fairly good reproducibility [4, 7, 10, 60]. These contain low paramagnetic content heavy water creating a unique, distinguishing electric field distribution quite different from customary wire-wire and plate-plate systems. LANR metamaterials, and high loading systems (included those explored by IENA, Energetics) and metallurgically engineered electrodes (NRL, SPAWAR, JET Energy) all point the way to high output powers and efficiencies.

On the other hand, codeposition LANR systems (see '976) point the way to speedy onset for some of the reactions. Codeposition yields faster results without the prolonged incubation times. In codeposition systems, fresh Pd and D plate out together on the cathode. Highly expanded surfaces, nanoscale spherical nodules dominate on the growing surface. Cyclic voltammetry and galvanostatic pulsing experiments indicate, and excess heat measurements herald, that a high degree of deuterium loading (with an atomic ratio D/Pd>1) is obtained within seconds. The results to date indicate nuclear reactions which occur very near the surface of the electrode (within a few atomic layers). In the original JET Energy Pd/D codeposition process, working and counter electrodes are immersed in a solution of palladium solution with neither chloride nor lithium, deposited on palladium. In the SPAWAR Pd/D codeposition process, working and counter electrodes are immersed in a solution of palladium chloride and lithium chloride in deuterated water, deposited onto silver, gold, or copper. There are physical differences in the two types involving deep diffusion [5], where Pd is deposited either on palladium (like Dr. Swartz) or upon non-loading materials such as copper, gold, silver, or platinum (like SPAWAR).

SPAWAR and JET have investigated the physical changes, the excess heat generation, hot spots with calibration showing near and far IR emission (Figure 3). JET Energy's and SPAWARS (near- and medical IR imaging) have revealed that in LANR there are cathodic hot spots, and not just Joule heating in the solution (IR drop). The desired reactions producing excess energy yield localized hot spots (Szpak). The calibrated imaging of these localized hot spots, using an infrared camera, reveal non-thermal near-IR emissions correlated with excess heat (Swartz) in active LANR devices by in situ monitoring [ref. 11; Figure 3]. This discovered non-thermal IR (NT-NIR) is linked, and specific, to the presence of excess heat production and not their physical temperature. This confirms the Swartz-Verner hypothesis that in LANR, unlike hot fusion, Bremsstrahlung emission, under increasingly lower temperatures, shifts from penetrating ionizing radiation toward skin-depth-locked infra-red radiation [61].

In LANR, excess heat and helium4 are the usual products, but charged particles, tritium, and the sequelae of neutrons can be sometimes detected. Excess heat and helium production are the dominant reactions. Melvin Miles of China Lake with Johnson-Matthey Pd rods was the first to show the correlation of heat and helium-4 production. Arata and Zhang reported de novo He4 with LANR, including with Zr2O4/Pd powder exposed to deuterium gas, but not with hydrogen gas. Les Case (28; NH), using LANR with platinum group metals on carbon catalysts, reported He4 production from deuterium gas. As a result of these findings, but ignoring the impact of the lattice for the moment, the reaction is something like



Energy and momentum are conserved in LANR [63,62,49], and because of the unique relationship to the lattice, the helium generated is moving slowly, at low velocity, very unlike hot fusion (discussed below). The He4 which appears is retained in the cathode, until very high temperatures (~850C). The peak energy is consistent with the relatively low energy, but penetrating, ionizing radiation. Miles (China Lake, USN) and M. Srinivasan (Bhabha Atomic Research Center, BARC) independently used dental x-ray films on the outside of his apparatus; they became fogged indicating low energy x-ray production. In rare conditions, tritium production has been seen. In India, M. Srinivasan from the (BARC) reported tritium in 1989. John Bockris (Texas A&M) reported tritium in bursts but the tritium was not accompanied by measurable heat, which he measured in other experiments. Szpak (SPAWAR) in open cells reported 3000 to 7000 atoms per second for a 24 hour period. Ed Storms (LANL) reported excess tritium in ten percent of his cells.



Some experiments have detected very low number neutrons and charged particles with short range. M. Srinivasan (BARC) reported neutrons in 1989. As the current increased beyond 100 amperes, neutron signals, in bursts, resulted in six of 11 cells. X.Z. Li (Tsinghua U) first used CR-39 in his 1990 Pd gas loading experiments to detect energetic charged particles [64]. CR-39 is a polyallyldiglycol carbonate polymer, widely used as a time-integrating, solid state, nuclear track detector. Larry Forsley (JWK International) and Mosier-Boss (SPAWAR) have reported D-D and D-T possible reaction pathways capable of generating the observed charged particles, neutrons, etc. Their CR-39 tracks indicate possible neutron interactions, including carbon shattering. Some tracks herald D-D and DT reactions. Etching suggests uniformity in the 2-8 MeV range. The triple tracks, found in ~5-10 of their experiments, indicate energetic neutrons having shattered a carbon atom. Also observed in LANR systems are post LANR mini-explosions, ionizing radiation, and neutron production, and tritium production. These observations of significant quantities of high energy charged particles, and emissions, in LANR systems, suggests that there is accumulating, near overwhelming, evidence that nuclear reactions in, and assisted by a lattice, are initiated at low energies.

P-F reported excess energies of 4 MJ (megajoules) in 80 hours. Similar amounts are seen in Figures 4 and 5. Several LANR devices show excess power gains from 25% to several times input electrical power, beyond the controls. High impedance LANR devices have shown power gains 200% to 400%, and one has yielded 8,000% power gain for a short time. JET Energy has shown that some electrodes, of specific shape, are metamaterials which produces excess heat of a superlative magnitude, successfully driving Stirling engines at the 1-19+ watt level [3,4,6,7,39,40,41]. In 2003, JET demonstrated a working LANR high impedance PHUSOR-type LANR systems for five days at MIT at ICCF10, producing ~230% excess energy at 1 to 2 watt level.

The most important point is that even if one were to replace the entire cathode with TNT, one would only get 1.2 KJ (kilojoules) on explosion. The excess energy observed with LANR is greater than any known chemical reaction. The second most important point is that the excess energy brings heat and changes wrought upon the electrode. SPAWAR, JWK, Stringham, Dash and others have reported volcano looking pits in electrodes. These induced pits are important for two reasons. First, these features require a lot of local heat to produce the focal melting of the Pd, require substantial energy expenditure in order to form, again consistent with a nuclear source, not chemical. Second, SPAWAR [12, 20, 22, 23], Mitsubishi Industries (Japan) [37], George Miley [U of Illinois, 65], and others have shown elements appearing only at these unusual sites, which are consistent with nuclear, possibly even fission, products, some of which could not be extracted from cell components.

Theories Involving Portions of LANR - It cannot be true that only one single "theory" will fit all the solid state, nuclear physics and requisite electrical engineering. They involve a complex non-linear, time-variant, system including an overloaded metal lattice, stirring with flux, and electrical currents involving both electrons and deuterons and their holes. In time, also formed are low dielectric constant layers appearing spontaneously in electrical series (bubbles). There are second order applied fields. This is in addition to the electric fields, magnetic fields, and electromagnetic fields including optical, terahertz and other irradiations, which LANR experimentalists use, which result from the drifting electrons, deuterons, and their holes. The bottom line is that no one theory can ever cover it all. Instead, there are several, and they fit conventional physics quite well [31,44,56,58,62, 63,69,70,71,72,73,74].

The quasi-one-dimensional (Q1D; 39-44) model of loading, based on continuum electromechanics, has led to the discoveries of optimal operating points and the key roles of D-flux, solution conductivity, and cathodic irradiation by laser in LANR systems. Recently, coupling this with Laplace's law has uncovered the need for deuteron flux within the palladium in an already highly loaded (D/Pd) LANR system. The Q1D models most important insight is that the first order D-flux equation, with the substitution of the Einstein relation, shows that the ability to load D depends on the ratio of ordering energy, (the applied electric field) to thermal disorder ( $k_B \cdot T$ ) minus what goes up into the gas. The latter is perhaps most important because it reveals why so many have failed to generate successful LANR, because the name "fusion by electrolysis" is a misnomer.

How is fusion achieved? Are there 'expected products'? In hot fusion without a lattice, the kinetic energy of 23.8 MeV charged particles (alphas) yields ionizations, Pd knock-off atoms, low energy X-rays, and heat. Secondary neutrons [by  $D(\alpha, n)$ ] have a small cross-section. Most physicists are more aware of the ionization and X-ray production of  $D + D$  impact physics without a lattice. In this hotter fusion, the products are fast moving helium [23.8 MeV alpha-particles] which yield 22 keV Pd K shell X-rays and bremsstrahlung below ~4 keV. Conventional bremsstrahlung is ionizing penetrating radiation well-associated with hot fusion. In  $D + D$  impact physics without a lattice, neutrons and charged particles (fast moving helium ions, alpha particles) are seen.

In summary, in hot fusion, the production ratios are about 50% neutrons with He3, 50% tritium and a proton, and a tiny fraction (less than 1/1,000,000) as nuclear gamma rays. By incredible contrast, the production ratios observed for LANR reactions is mainly He4, and negligible He3, neutrons and gammas of very low energies.

Historically, since 1989, cold fusion was ignored, along with the scientific facts, generally speaking. The basic truth is that the temperature of cold fusion, lattice and the nuclear isospin control which products are observed. The physics in LANR appears conventional, but band energies, lattice and isospin issues, and temperature dependences must be addressed. First, not all emission branches from the excited state of  $\text{He4}^*$  are even spin-available. The gamma emission branch from the excited state of  $\text{He4}^*$  is actually spin-forbidden for both hot and cold fusion [62,63]. However, at higher hot fusion temperatures the restriction is lifted slightly. This is consistent to what is seen for both hot and cold fusion.

Second, the relative absence of neutron and hard gamma-ray penetrating radiation in cold fusion appears to be due to the lack of availability for two different, but thermally linked, reasons. The first thermally linked reason is that the only nuclear branches available are those whose band gaps are surmountable by the available activation energy (limited by the ambient temperature and incident radiation). The neutron emission branch is more than 1 MeV above the first excited state ( $\text{He4}^*$ ). Hot fusion has large activation energies available (it is 'hot'). LANR/CF is not. In LANR, given the actual much smaller amount of thermal energy,  $k_B T$ , available for cold fusion ( $\sim 1/25$  eV), absence of adequate activation energy decisively means that that branch is NOT available, as it is for hot fusion. Neutrons are not observed, helium 4 production is in its stead.

The second thermally linked reason is that in the analysis for LANR, with the explicit incorporation of temperature into the Bremsstrahlung equations, reveals that ionizing penetrating radiation by Bremsstrahlung is not expected at low temperature. The Bremsstrahlung shift (secondary to temperature and lattice availability) alters from what is expected at room temperature with the forward deposition of energy dropping by 18 orders of magnitude. Instead, at cold fusion temperatures, the penetrating ionizing radiation shifts to lower frequencies [to the near infrared (N-IR)] where the radiation is not longer ionizing, and where it is trapped in the palladium by the 'skin-depth' effect. In fact, this shift to near-IR was later observed (and reported) in LANR devices when they were operated at their OOP. The result is non-thermal near-IR emission [11].

It is the lattice which is key to the final products. It controls the de-excitations to produce  $\text{He4}$  in the ground state if there is coupling to though phonons. In hot fusion, the lattice --and therefore the coupling-- are not there. In LANR/CF, the fast moving  $\text{He4}$  (as charged particles, alphas) are not seen because the phonons, each about 35-43 millieV, help the  $\text{He4}^*$  state shed  $\sim 20+$  MeV to return to the  $\text{He4}$  ground state [7, 71,57,38,58]. However, in a coherent lattice, if there are enough phonons to enable transfer in the nanoseconds required. Hence the "excess

heat". Ergo, it is the lattice that opens up the new pathway. The many-spin, spin boson model [61,58] has led to discoveries of how exchange energy between oscillator quanta enable coherent energy exchange. One sine qua non is there be enough phonons (lattice vibrations) [7,71,75,57,38,58]. If they act coherently, and if there are enough Frenkel defects, then the lattice appears to be "oiled" enough for coherent energy transfer (this is from where the excess heat arises) from the very high energy nuclear state consisting of the nuclear helium excited state to the lattice [58,62,70,7]. The CAM (catastrophic active media [56]) theory models the unusual change in deuteron solubility that Pd demonstrates with temperature.

The Board has overlooked that as purported evidence to support the Examiner's notions, the Office cites other art and the same old chorus of "nay-sayers" in older books, papers, and even newspapers from last century, including "less relevant columns from periodicals and newspapers (see Appellant's Point 4, page 20+ of the Brief) that are functionally "old" and out-of-date, irrelevant and immaterial, yellowed, "brittle" newspapers, and "ancient" reports of poor quality (\*\*\*\*). In an attempt to support the unfair rejection, the Examiner cites other art including less relevant experimental and theoretical papers, and also some columns from periodicals and newspapers. Of said art, most are from circa 1989. Although, in 1989 the physics community did not believe the initial P-F experiments since fusion was not known to occur at low temperatures or in solids. Today, the experimental facts rule. The initial failures, some which took years to understand, involved poorly constructed paradigms, questionable materials and loadings, but that is now resolved. Particle emission, excess energy, power gain, commensurate linked helium-4 production, increasing power gains and total energies have been achieved since 1989.

The Board has overlooked that most efforts failed because of flawed paradigms, cracked inactive palladium cathodes, contamination (including from ordinary water), and most often, improper cell configurations, inadequate or questionable loadings, and incubation times. The patterns of failure have been many and have been discussed in detail elsewhere [1,38]. As the Hagelstein Declaration states,

**"Today, D/Pd loading is known to be very important. There have been numerous peer-reviewed published papers that show positive excess heat results in replications of the Fleischmann-Pons experiment. If the USPTO have asserted otherwise, they are simply mistaken."**

**(\*\*\*\*\*) All this overlooks the pro se Appellant's submitted Evidence in the original specification and thereafter.**

The Board has misunderstood that the evidence (papers and Declarations) demonstrate the existence of lattice assisted nuclear reactions (LANR, also called LENR, cold fusion, and CMNS) and their products (such as helium-4). The problem for the Office is that their previous citations now support LANR. The two decades of positive results, the Declarations, and the peer-reviewed published literature have much more evidentiary value than the few "negative" less credible -- recycled and older -- reports cited by the Examiner about art cut of different cloth than the present invention.

The Board has overlooked that the Examiner's Answer does not even list one of the relevant Applicant's peer-reviewed publications published by the American Nuclear Society involving these inventions, and cited by the Applicant (now Appellant). The Decision does not discuss or cite the basis of its impugning the Appellant and ignoring the American Nuclear Society. For example, the Decision has overlooked testimony from the youngest Nobel Prize winner, Dr. Brian Josephson, who actually spent hours watching Appellant's invention operating. Confer Appendix 7 (Exhibit "G") on Dr. Josephson put his affidavit onto the World Wide Web and it was listed in the Appeal Brief --- but ignored.

The Board has overlooked that the Forms 1440 (worthless, since they were submitted, and ignored) even though discussed in the record and Appeal Brief) listed the peer-reviewed peer review scientific papers of the Appellant (then Applicant) in Fusion Technology [e.g. Swartz, 1998, Improved Electrolytic Reactor Performance Using p-Notch System Operation and Gold Anodes, Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85}. They dispute the Office.

The Board has overlooked that the Examiner was referred to the Applicant's peer-reviewed article in the Journal of Scientific Exploration (Winter 2009, January 2010), "Survey of the Observed Excess Energy and Emissions In Lattice Assisted Nuclear Reactions".

The Board has overlooked that despite what the Examiner has purported, LANR is a real science, and heat is generated of significant use. The Examiner, the Board, and the court, are referred to:

Cravens, Dennis, and Dennis Letts, "The Enabling Criteria of Electrochemical Heat: Beyond Reasonable Doubt", 71, Proc. ICCF-14, ISBN: 978-0-578-06694-3, (2010).  
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The Board has overlooked that, despite what the Examiner has purported, a theory is not needed.

As the Ahern Declaration states,

**"In 1987 I was charged with the duty to survey the field of the new superconductors which were at first a great shock to experts in the field. I was selected for this work in part due to my M.S. thesis in the field of low temperature Physics. It is merely coincidental that my thesis topic was based on loading palladium alloys with hydrogen and deuterium and measuring the superconducting transition temperatures. My two year survey concluded that the theoretical underpinnings of superconduction were sadly lacking. The BCS theory was not only incapable of predicting the occurrence of the YBCO materials, it was incapable of making a priori predictions for any arrangement of matter. This observation regarding the lack of understanding in low temperature physics is not widely known. This lack of first principles level of understanding has been of little concern to experimentalists and has not discouraged extensive re-search support."**

## Appendix "G"

### **Fusion alternative to fossil fuels**

Posted on Sunday, June 06, 2004 @ 21:45:24 PDT by viad

In the Independent.co.uk Professor BRIAN JOSEPHSON writes:

**Testimonials**

Sir: In regard to the letter of Jon Summers (1 June), nuclear fusion already works! the way to make it work was demonstrated 15 years ago by Stanley Pons and Martin Fleischmann but an inadequate, poorly analysed experiment by rival workers specialising in high-temperature fusion led to the scientific community concluding that "cold fusion" was a delusion, and to the suppression of such investigations.

Research continued in some laboratories nevertheless, and on a recent visit to the US I visited one, witnessing an apparently well-designed experiment where the heat energy output was some 40 per cent in excess of the energy put into the system. Total energy excess amounted to 48 kilojoules per cubic centimetre of electrode, an amount significantly greater than can be accounted for by any of the non-fusion mechanisms suggested by the sceptics.

It should be feasible, according to Dr Mitchell Swartz of JET Energy Technology, the scientist in charge of the experiment, to scale up this process to provide a source of energy on a large scale that does not generate greenhouse gases and is radiation free. In frustrating such a development, the scientists who denounced the original cold fusion research appear to have done mankind a grave disservice.

Professor BRIAN JOSEPHSON  
Department of Physics  
University of Cambridge

From:  
<http://argument.independent.co.uk/letters/story.jsp?story=527644>

## Appendix "D"

### ICCF10: A Message From The Front

As we send this issue of Infinite Energy to our printing company in Manchester, New Hampshire in early September, we have just returned from the exhilarating Tenth International Conference on Cold Fusion (ICCF10) in Cambridge, Massachusetts, very near and also at MIT. Yes, there was an historic set of excess-heat-producing cold fusion demonstrations at Prof. Peter L. Hagelstein's offices at MIT in the Dept. of Electrical Engineering and Computer Science! There is a staggering amount of news about cold fusion and low-energy nuclear reactions (LENR) to report from the conference (a lot to digest even for a veteran attendee of ICCF's). Time and space do not allow a lengthy report in this Infinite Energy, but it is likely that by the time you receive this issue I will have posted a special review of ICCF10 on our web site [www.infinite-energy.com](http://www.infinite-energy.com). Of course, there will be a full hard-copy report in the next issue of the magazine (out in November), and readers should also consult the material being posted on [www.lenr-canr.org](http://www.lenr-canr.org). Infinite Energy's non-profit New Energy Foundation, Inc. plans to offer soon one or more DVD's that will highlight important conference lectures (and possibly a set of DVD's covering the entire conference).

For now and to whet your appetite for more information, here are some of the high points to be taken from ICCF10:

During ICCF10, Dr. Mitchell Swartz's palladium Phusor/low electrolyte conductance heavy water/platinum cell performed flawlessly in Prof. Hagelstein's lab at MIT. Its excess power ranged from 167% to 267% as Dr. Swartz altered the experimental conditions. This excess heat, as measured by his precision calorimeter, persisted from Sunday August 24 to August 30, longer than ICCF10 itself. The excess heat was interrupted on the last day only to bring the equipment back to Wellesley, MA ; otherwise it would have continued much longer.

Prof. John Dash of the physics department at Portland State University in Oregon and his summer high school student interns also put on historic demonstrations of excess heat at Prof. Hagelstein's lab. They used simple but effective calorimetric apparatus, which allowed observers to check the level of excess heat for themselves. This proves that even high-school students can be more effective on the frontiers of science than the US Department of Energy and the 1,000-plus MIT professors who did not attend ICCF10. Only two MIT professors attended ( Prof. Hagelstein and ex-Prof. Keith Johnson, both of whom have been involved in the field since its early days. (This, despite the 150 to 200 ICCF10 posters that I had earlier placed around MIT and a prominent ad in the Boston Globe which Prof. Hagelstein paid for from his personal funds.) Only a few MIT students

showed up (outnumbered by the high-school students in Prof. Dash's group from Portland State University in Oregon. (It should be noted that both the Boston Globe and the Boston Herald chose to boycott the conference, despite having been repeatedly alerted about its significance.)

Helium-4 correlated with excess heat has been observed now in a solid-state LENR device by a laboratory effort sponsored by the Italian government. The astonishing nuclear transmutation experiment carried out by the Iwamura group at Mitsubishi Heavy Industries Advanced Technology Division, which was reported in *Infinite Energy* (No.47, pp.14-18) and later published in the *Japanese Journal of Applied Physics* has now been reproduced by the A. Takahashi group at Osaka University. In this experiment, deuterium (heavy hydrogen) gas is made to flow through a palladium membrane onto which another element, such as cesium or strontium, has been deposited. With no energy input (other than the pressure of the gas) the deposited element transmutes to another element. For example, cesium declines and the rare earth element praseodymium appears and grows. Or, strontium declines and molybdenum grows. The term 'grow' is appropriate, since to make the new elements, it is necessary for the starting nuclei to 'absorb' four deuterium nuclei! Obviously, this flies completely in the face of every cannon of basic chemistry, but the evidence for the result is now overwhelming. It is nothing short of modern alchemy.

There is much more, but I need to end these highlights. Though the 'cold fusion war' has not yet been won and it could still be lost, the field seems to have picked itself up with the remarkable turning point of ICCF10.

Dr. Eugene Mallove  
September 2, 2003

Dr. Mallove was brutally murdered May 14, 2004 while working to bring cold fusion forward to help the citizens of the United States of America.

## Appendix "E"

ZerEpoin@  
8200A Bull's Ferry Rd. #2  
North Bergen, NJ 07047

September 1, 2003

Mr. Al Gore

Dear Al,

... My more strategic issue concerns energy. I've included some articles with the same kind of investigative details about First Energy and their links to the current "ruling faction" in Washington. However, I've also included the list of attendees from last week's "10th International Conference on Cold Fusion" and highlighted some of the names, titles and entities the attendees represented. No, cold fusion is not yet ready for full-scale commercialization. Yes, cold fusion is real and deserves research funding. Interestingly, Dr. Peter Hagelstein of MIT was the conference chair. He did a magnificent job. There was even a "field trip" from the hotel where the conference was held in Cambridge, to Room 568 in Building 36 at MIT where a live "overunity" (more-power-out-than-in) cold fusion experiment was hosted by Dr. Mitchell Swartz.

I learned first-hand at this conference that the very academic "cold fusion community" is far more interested in determining the physical and chemical equations in the languages they know than they are in understanding how the simple spark has enough energy in it to melt aluminum. They appear to go to great lengths to overcomplicate things, but that is understandable, since it conforms to the paradigms they are most accustomed to. .... Two names on the conference attendee list are from Toyota Central R & D Labs. This was most encouraging, since Toyota funded Fleischmann and Pons in France after they were "run out of town" by the American Physical Society in 1989-1990. In my letter of 7/31 to Mr. Toshiaki Taguchi, president & CEO of Toyota Motor North America, I asked Toyota to fund research into "new energy" in a new way, using a recently updated version of the

artificial intelligence application that IBM used to defeat Gary Kasparov in chess in the mid-'90's. My proposed approach would include analyzing the data from ALL new energy experiments (at least as many as possible that are published) to factor out the "least common denominator(s)" in them.

Let's apply a methodology with a proven track record for determining optimal logical strategies to the search for an appropriate energy alternative to oil, gas and current-day fission nuclear power, none of which are clean, safe or economical.

Yours truly,  
John Miranda, President  
ZeroPoint®

## APPENDIX "H"

If the Board allows any new evidence to counter the Examiner's "new" grounds of rejection and Examiner's new (purported) evidence, then to create said Evidence, the Appellant will request that each individual associated with Exhibit "H", enter their Declarations about the field, the Appellant's contributions, and the Office's behavior. A Petition has been entered requesting such.

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Commonwealth  
of Australia

# Letters patent

Patents Act 1990

No:  
688475

## STANDARD PATENT

I, Leo John O'Keeffe, Acting Commissioner of Patents, grant a Standard Patent with the following particulars:

**Name and Address of Patentee:**

E-Quest Sciences, 2166 Middlefield Road Mountain View CA 94043 United States Of America

**Name of Actual Inventor:** Roger S Stringham

**Title of invention:** Method for producing heat

**Application Number:** 19078/95

**Term of Letters Patent:** Twenty years commencing on 1 December 1994

**Priority Details:**

**Number**

160941  
340256

**Date**

3 December 1993  
16 November 1994

**Filed with**

UNITED STATES OF AMERICA  
UNITED STATES OF AMERICA



Dated this 2 day of July 1998

L.J. O'KEEFFE  
ACTING COMMISSIONER OF PATENTS





**SEARCHED**

Class	Sub:	Date	Exmr:
376	100 245 248 <del>250</del> 259 258 103 104 107 146 150 340	10-11-91  update 4-4-92	  
73	579 580 657 65 5		
77	210 FP 216-219 222 elig: 11	=	
204	222 223 197 198 129.2 129.3 153.1 elig: 4-6 elig: 11		
429	90		
356	345 355 358 373, 375		

# INTERFERENCE SEARCHED

Class	Sub:	Date:	Exmr:

SEARCH NO

#4 Dection Dr Petter 3/11

45	Letter	1-25
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FEB 23 2001

U.S. Department of Justice  
Office of the Solicitor General

Washington, D.C. 20530

February 20, 2001

Hal Fox, Ph.D  
Emerging Energy Marketing  
Firm, Inc. (EEMF)  
3084 East 3300 South  
Salt Lake City, Utah 84109

Re: Swartz v. Dickinson, No. 00-1191

Dear Dr. Fox:

As requested in your letter of February 16, 2001, I hereby consent to the filing of an amicus curiae brief in compliance with Supreme Court Rule 34 in the above-captioned case.

Sincerely,

  
Barbara D. Underwood  
Acting Solicitor General

cc: William K. Suter, Esq.  
Clerk  
Supreme Court of the United States  
Washington, D.C. 20543

**UNITED STATES PATENT AND TRADEMARK OFFICE**  
**Board of Patent Appeals and Interferences**  
**Case 2009-1853**

**Board of Patent Appeals and Interferences**  
Box 1450  
Alexandria, VA 22313-1450  
FAX 571 273 0052

December 31, 2010

**To Whom it Does Concern:**

Transmitted herewith for filing are the following:

- 1) *pro se* request for rehearing (three copies);
- 2) Set of Appendicies and Exhibits for the 12/31/2010 Request for Rehearing;
- 3) Copies are included as a CD ROM containing 119 Appendicies in the Record, in Response to the Decision, and in the Record in other Cases Before the Board involving the Appellant (Two sets, original and copy in foam and hard disc protection cover with label);
- 4) A Notice of Appearance;
- 5) This letter, and
- 6) A self-addressed stamped postcard for the stamp of the US Patent Office to indicate receipt.

Thank you, and Happy New Year  
Respectfully,

  
Mitchell Swartz, ScD, MD, EE  
Weston, Mass

**CERTIFICATE OF MAILING [37 CFR 1.8(a)]**

December 31, 2010

**To Whom it Does Concern:**

I hereby certify that this correspondence will be deposited with the United States Postal Service by First Class Mail, postage prepaid, in an envelope addressed to

**Board of Patent Appeals and Interferences**


Box 1450

Alexandria, VA 22313-1450 on the date below:

Thank you.

Sincerely,

December 31, 2010

  
M.R. Swartz  
Weston MA 02403

**UNITED STATES PATENT AND TRADEMARK OFFICE**  
**Board of Patent Appeals and Interferences**

**Case 2009-1853**

**Board of Patent Appeals and Interferences**  
Box 1450  
Alexandria, VA 22313-1450  
FAX 571 273 0052

December 31, 2010

To Whom it Does Concern:

**APPELLANT'S**  
**NOTICE OF APPEARANCE *pro se***

1. Appellant requests to re-inform the Honorable Board of his appearance *pro se*.

2. There is a history of the Examiner not sending the Examiner's pleadings to the Appellant. The Appellant has asked for a copy of the docket and so far been refused.

The Appellant now asks the Clerk of the above entitled court for a copy.

Thank you.

Respectfully,

A handwritten signature in black ink, appearing to read "Mitchell Swartz", is written over a horizontal line.

Mitchell Swartz, Appellant, *pro se*  
Weston, Mass

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today  
(1) was not written for publication in a law journal and  
(2) is not binding precedent of the Board;

Paper No: 77

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Ex parte MITCHELL R. SWARTZ; DE 86

Appeal No: 94-2921  
Application 07/371,937<sup>1</sup>

ON BRIEF

**MAILED**

**JUL 30 1999**

**PAT. & T.M. OFFICE  
BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Before METZ, JOHN D. SMITH and WARREN; Administrative Patent  
Judges.

JOHN D. SMITH, Administrative Patent Judge: Exhibit  
Decision Under Appeal  
IN RE SWARTZ; 00-1107

DECISION ON APPEAL

This is an appeal pursuant to 35 U.S.C. § 134 from the final rejection of claims 32 through 43, all the claims in the application. The subject matter of the claims on appeal is directed to so-called "cold fusion" technology.

<sup>1</sup>Application for patent filed June 27, 1989.

Appeal No. 94-2921  
Application 07/371,937

against the stated grounds of rejection. Compare the brief at page 22. Thus, we summarily sustain the rejection of the appealed claims under 35 U.S.C. § 112, second paragraph:

THE REJECTIONS UNDER 35 U.S.C. § 102  
AND 35 U.S.C. § 103

In considering the examiner's rejection of the appealed claims for anticipation under 35 U.S.C. § 102 and obviousness under 35 U.S.C. § 103, we are guided by the fundamental tenet of a patent law that references relied upon to support a rejection under 35 U.S.C. § 102 and 35 U.S.C. § 103 must provide an enabling disclosure, i.e., they must place the claimed invention in the public's possession. In re Payne, 606 F.2d 303, 314, 203 USPQ 245, 255 (CCPA 1979). An invention is not possessed absent some known or obvious way to make it. Id.

Here, the technology involved is one based principally on the work of and publication of Pons/Fleischmann which has been substantially discredited by the attempts of those skilled in the art to duplicate the results of their work. Clearly, based on the record before us, the references to Johnson and Chen cannot be relied upon to support the examiner's rejections in this technology. Accordingly, we cannot sustain the examiner's rejections under 35 U.S.C. § 102 and 35 U.S.C. § 103.

Appeal No. 94-2921  
Application 07/371,937

Representative claims 32 and 42 are reproduced below:

32. In a process for producing a product from an isotopic fuel using a material which is electrochemically loaded, a method for monitoring the isotopic fuel within said material that comprises:

mechanically coupling said material to enable a mechanical vibration of said material,

providing means for exciting said vibration, [sic, and]

following the frequency of said vibrational state.

42. In a process for producing an electrochemically induced nuclear fusion reaction, a method for monitoring the isotopic fuel in said material that comprises:

mechanically coupling one electrode so as to enable at least one vibrational frequency of said electrode,

inducing at least one vibrational frequency of said electrode, and

monitoring said vibrational frequency.

Prior art references relied upon by the examiner as evidence of anticipation and obviousness are:

Johnson	4,693,119	Sept. 15, 1987
Chen et al. (Chen)	4,850,225	July 25, 1989

The following references of record<sup>2</sup> relate to cold fusion theories published following the initial report by Fleischmann

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<sup>2</sup>Several of these references were commonly cited in the prosecution of Application No.'s 07/760,970, which is also presently under appeal.

Appeal No. 94-2921  
Application 07/371,937

and Pons in 261 J. Electroanal. Chem., "Electrochemically induced nuclear fusion," pp. 301-308 (1989):

Aspden 2 231 195 B Jul. 11, 1990:  
(United Kingdom patent)

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Application 07/371,937

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Rogers et al. (Rogers), "Cold Fusion Reaction Products and Their Measurement," 9 Journal of Fusion Energy, no: 4, pp: 483-485 (1990):

Salamon et al. (Salamon), "Limits on the emission of neutrons,  $\gamma$ -rays, electrons and protons from Pons/Fleischmann electrolytic cells," 344 Nature, pp: 401-405 (March 29, 1990):

Appeal No. 94-2921  
Application 07/371,937

Samgin et al. (Samgin), "The Influence of Conductivity on the Neutron Generation Process in Proton Conducting Solid Electrolytes," ICCF-4, two unnumbered pages (December 1993):

Shani et al. (Shani), "Evidence for a Background Neutron Enhanced Fusion in Deuterium Absorbed Palladium," 72 Solid State Communications, no. 1, pp. 53-57 (Great Britain, Pergamon Press, 1989):

Silvera et al. (Silvera), "Deuterated palladium at temperatures from 4.3 to 400 K and pressures to 105 kbar: Search for cold fusion," 42 Physical Review B, no. 14, pp. 9143-9146 (November 15, 1990):

Srinivasan, "Nuclear Fusion in an Atomic Lattice: An Update on The International Status of Cold Fusion Research," Current Science, pp. 1-27 and 31-48 (April 25, 1991):

Stipp, "Georgia Group Outlines Errors That Led To Withdrawal of 'Cold Fusion' Claims," The Wall Street Journal, p. B4 (April 26, 1989):

Storms et al. (Storms), "Electrolytic Tritium Production," 17 Fusion Technology, pp. 680-695 (July 1990):

Swartz (Swartz, Fusion Facts '92), "Reexamination of a Key Cold Fusion Experiment: 'Phase-III' Calorimetry by the MIT Plasma Fusion Center," 4 Fusion Facts, no. 2, pp. 27-40 (August 1992):

Swartz, "Quasi-One Dimensional Model of Electrochemical Loading of Isotopic Fuel Into A Metal," Fusion Technology, MS#143892F, pp. 1-13 and 2 unnumbered drawings (January 4, 1992):

Swartz, "Isotopic Fuel Loading Coupled to Reactions at an Electrode," JET Technology 6 unnumbered pages (December 26, 1993):

Taubes, BAD SCIENCE: The Short Life and Weird Times of Cold Fusion, pp. xiii, 303, 425-428, 475-481 (New York, Random House, 1993):

WGBH-TV, Show #1802 Transcript, "NOVA: Confusion in a Jar," pp. 2-19 (New York, NY, Journal Graphics, Inc., April 30, 1991):

Appeal No. 94-2921  
Application 07/371,937

Will (Will), "Cold Fusion Overview and Executive Summary," pp. 1-2 - 1-31 (Salt Lake City, Utah, National Cold Fusion Institute, 1991) in 1 Investigation of Cold Fusion Phenomena in Deuterated Metals, Final Report, Overview, Executive Summary, Chemistry, Physics, Gas Reactions, Metallurgy, Technical Information Series PB91175885 (Salt Lake City, Utah, National Cold Fusion Institute, University of Utah, June 1991).

Ziegler et al. (Ziegler), "Electrochemical Experiments in Cold Nuclear Fusion," 62 Physical Review Letters, no. 25, pages 2929-2932 (June 19, 1989):

The appealed claims 32-43 stand rejected under 35 U.S.C. § 112, first paragraph, enablement requirement, and under 35 U.S.C. § 101 for lack of operability or utility. Additionally, appealed claims 32-43 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which appellants regards as the invention. Further, appealed claims 32 and 35-41 stand rejected under 35 U.S.C. § 102 over Johnson. Finally, appealed claims 32-41 also stand rejected under 35 U.S.C. § 103 over Johnson in view of Chen.

#### BACKGROUND

In the spring of 1989, electrochemists, B. Stanley Pons of the University of Utah and Martin Fleischmann of South Hampton University in England reported that they had successfully carried out a sustained nuclear fusion reaction at room temperature (i.e., "cold fusion") in a small jar on a laboratory table top.

Appeal No. 94-2921  
Application 07/371,937

The Pons/Fleischmann experimentation involved operation of a common electrolytic cell with a palladium cathode and a heavy water (deuterium oxide) electrolyte solvent. That palladium was a metal capable of absorbing large amounts of gaseous hydrogen was well known, and in the Pons/Fleischmann "cold fusion" apparatus, deuterium (heavy hydrogen) ions ( $D^+$  ions) allegedly appeared to go into the palladium cathode's crystal lattice about as readily as regular hydrogen ions ( $H^+$ ). However, what generated great skepticism for those skilled in the art were the claims of Pons/Fleischmann that a sustained nuclear fusion reaction at room temperature had been demonstrated which allegedly produced great amounts of energy, for example, four watts of power for each watt of input power.<sup>3</sup>

Much of the record before us in this appeal involves publications describing the contemporaneous attempts of those skilled in the art to duplicate the Pons/Fleischmann results. The experimentation described in these documents constitutes compelling objective evidence justifying the initial disbelief of those skilled workers in the Pons/Fleischmann promise of clean, cheap and abundant energy without side effects from "tabletop" cold fusion.

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<sup>3</sup>See Huizenga, second full paragraph at page ix.

Appeal No. 94-2921  
Application 07/371,937

Exemplary of the initial reports from skilled workers is the statement from the cold fusion team at the United Kingdom Atomic Energy Authority at Harwell (see Cooke at page 5) that after a comprehensive experimental program involving a monumental effort attempting to verify the Pons/Fleischmann cold fusion claims that

[i]n none of these experiments was there any evidence of fusion taking place under electrochemical additions.

and

there was no evidence of excess heat generated by any of their cells.

In similar fashion, a team of scientists at the California Institute of Technology (see Lewis at page 525) indicated that

[w]ith a variety of metallurgical pretreatment procedures and different electrolytes, no evidence has been obtained for any excess enthalpy, neutrons, gamma ray, tritium or helium production during electrolysis of  $D_2O$  with palladium cathodes. [Emphasis ours.]

Likewise, researchers at Sandia National Laboratory (see Ewing at page 1165) reported that

[n]one of the more than thirty cold fusion systems that we investigated produced any detectable neutron emission, with an average statistical uncertainty of 5 neutrons per hour (one standard deviation). No significant neutron bursts were detected, : : :

And from a team of researchers at the Massachusetts Institute of Technology (see Albagli at page 133), it was stated

Appeal No. 94-2921  
Application 07/371,937

[w]ithin estimated levels of accuracy, no excess power output or any other evidence of fusion products was detected.

Finally,<sup>4</sup> in criticizing the Pons/Fleischmann report, Huizenga concluded (page 39) that

the craving for fame, notoriety and patent rights took precedence over following the normal scientific procedures.

Against the above background of skepticism and failure of experimenters worldwide to reproduce the results allegedly obtained by Pons/Fleischmann, appellant filed the present application which describes "a novel method and system to monitor and accelerate electrochemically induced nuclear fusion reactions" (specification, page 5, last paragraph). In an apparent reference to the work of Pons/Fleischmann, appellant indicates that such fusion reactions "have been reported" in the prior art "although they are difficult to obtain" (specification, page 4, lines 6 and 7). Basically, appellant's specification involves a novel cathode which is purportedly able to vibrate at a natural frequency in response to electrochemically induced nuclear fusion reactions. Appellant's invention also includes means to monitor the frequency of the cathode's vibration and

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<sup>4</sup>Numerous other publications referred to in the Answer report similar findings and skepticism from the scientific community regarding the purported results obtained from cold fusion experiments.



Appeal No. 94-2921  
Application 07/371,937

means "to relate frequency changes to changes in the cathodic mass which herald said fusion reactions" (specification, page 5, last paragraph).

THE REJECTIONS UNDER 35 U.S.C. § 112  
AND 35 U.S.C. § 101

We address the rejections of the appealed claims under 35 U.S.C. § 112, first paragraph, enablement requirement, and under 35 U.S.C. § 101 together. The rejection under 35 U.S.C. § 101 for lack of utility is tantamount to a rejection under the how-to-use provision of the enablement clause of the first paragraph of 35 U.S.C. § 112. In re Fouché, 439 F.2d 1237, 1243, 169 USPQ 429, 434 (CCPA 1971) ("If such compositions are in fact useless, appellant's specification cannot have taught how to use them."). The lack of utility because of inoperativeness (a question of fact), and the absence of enablement (a question of law) are thus closely related grounds of unpatentability. Newman v. Quigg, 877 F.2d 1575, 1581, 11 USPQ2d 1340, 1345 (Fed. Cir. 1989). The law and the facts here compel us to sustain the examiner's rejections under the above sections of the statute.

With respect to the questions raised under 35 U.S.C. § 101, initially we note the examiner's holding that the utility of the claimed invention is based upon allegations that border on the incredible or on allegations that would not be readily accepted

Appeal No. 94-2921  
Application 07/371,937

by a substantial portion of the scientific community. See the Answer at pages 4 and 9. Under such circumstances, as correctly noted by the examiner, objective evidence of operability is required. "Where an applicant predicates utility for the claimed invention on allegations of the sort which are or border on the incredible in light of contemporary knowledge of the particular art, those allegations must be substantiated by acceptable evidence." In re Perens, 417 F.2d 1072, 1074, 163 USPQ 609, 611 (CCPA 1969). We agree with the examiner that the asserted utility here falls into the category which "borders on the incredible" in light of contemporary knowledge of this art, as of June 27, 1989, the date of filing of this application.

Appellant's claimed processes lack utility because it has not been shown that they do what appellant claims they do, i.e., monitor isotopic fuel in a material during an electrochemically induced nuclear (cold) fusion reaction (specification, e.g., pages 5-8). Moreover, appellant's specification contains no data to show that the disclosed apparatus function to achieve "cold fusion" or how the claimed processes are able to monitor a cold nuclear fusion or transformation process. Although appellant claims to know how the process and apparatus works, he has presented no objective evidence that cold fusion has been reproducibly achieved by anyone, much less successfully monitored

Appeal No. 94-2921  
Application 07/371,937

as claimed by him. The specification is simply long on theory and short, indeed void, of relevant data. In light of the ample evidence that data concerning the various attempts to run and measure a cold fusion process has been irreproducible, it is not clear how appellant could design a system and corresponding process that could be relied upon to monitor a cold fusion reaction based on unsubstantiated mathematical analysis, much less design a working process to monitor the same. Thus, appellant's specification appears to describe little more than a hypothesis, as suggested by appellant's own recognition that "the reactions will probably be difficult to monitor" (specification, page 4, second paragraph; emphasis supplied).

To comply with the enablement requirement of the first paragraph of 35 U.S.C. § 112, a disclosure must adequately present the claimed invention so that an artisan could practice it without undue experimentation. In determining whether any given disclosure would require undue experimentation to make and use claimed subject matter, consideration must be given to such factors as the predictability or unpredictability of the art in question, the relative skill of those in the art, the state of the prior art, the nature of the invention, the presence or absence of working examples, the amount of direction or guidance presented, and the quantity of experimentation necessary.

Appeal No. 94-2921  
Application 07/371,937

In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988), citing with approval Ex parte Forman, 230 USPQ 546, 547 (Bd. Pat. App. & Int. 1986):

With respect to each of the above-noted considerations, the record before us leads to the conclusion that undue experimentation would be required to perform the processes in the manner claimed. Although the skill of those in this art may be considered relatively high, the numerous contemporary publications in the record before us compel a conclusion that the art in question is highly unpredictable. Moreover, as observed above, the nature of the invention involves an "incredible utility" while the present specification presents no working examples nor specific direction or guidance as to how to achieve the claimed results. Indeed, the specification contains no disclosure of any operative embodiment or any of the specific parameters necessary including disclosures regarding compositions, pressures, current strength, voltage, electrical potential, or length of time the process should be carried out.<sup>5</sup> Moreover, the figures describing the apparatus used by this process are mere schematics.

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<sup>5</sup>Compare Huizenga, page 87.

Appeal No. 94-2921

Application 07/371,937

The examiner relies on a number of references to establish that the scientific community does not accept the cold fusion process as having been confirmed in terms of evidence supporting the claims of "excess energy" being generated (Examiner's Answer, page 4, second paragraph). The examiner further relies on the publication by Huizenga, and, by inference, to the report issued by the United States Department of Energy - Energy Research Advisory Board (ERAB) Panel which Huizenga co-chaired.<sup>6</sup> The examiner notes that this panel "concluded that there is a lack of evidence concerning nuclear reactions of the 'cold fusion' concept type" (Examiner's Answer, page 4, third paragraph). It is noted that the strength and credibility of the panel comes from twenty-two distinguished members with expertise in many different scientific disciplines (Huizenga, page 240). The examiner also indicates that a significant problem with "cold fusion" is "the lack of reproducibility of the alleged positive results" (Examiner's Answer, page 11, fourth and fifth paragraphs).

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<sup>6</sup>While the report issued by the United States Department of Energy - Energy Research Advisory Board (ERAB) Panel is not part of the record, it is significantly discussed in Chapter VII of Huizenga, page 86. The efforts of the ERAB are also cited in Taubes.

Appeal No. 94-2921  
Application 07/371,937

In the appeal briefs<sup>7</sup> filed September 11, 1992 (Paper No. 24) and November 30, 1992 (Paper No. 30), appellant provides a voluminous discussion of a number of references and declarations submitted in an attempt to establish the feasibility of the cold fusion process (Appeal Brief, Paper No. 24, pages 20-22 and 23-24; Appeal Brief, Paper No. 30, paragraphs 27-33). Appellants have supplemented this discussion with a Reply Brief filed February 14, 1994 (Paper No. 43½), a Second Reply Brief filed April 26, 1994 (Paper No. 48) and a Third Reply Brief filed October 16, 1998 (Paper No. 76). Nevertheless, even in light of the additional submissions, we find that appellant's mere argument does not overcome the examiner's position.

The appellant states that "growing numbers of the scientific community do take seriously both the 'excess heat' and the possibilities of both misunderstanding and/or possible misconduct used to obscure early reports of these phenomena" (appeal brief, Paper No. 24, page 20, fourth full paragraph). We note that many references relied upon by the appellant are dated after the filing date of this application. However, the

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<sup>7</sup>Pursuant to a decision on petition entered September 20, 1993 (Paper No. 39), the Examiner's Answer was to be "in response to Appeal Briefs filed September 11, 1992 and November 30, 1992." We refer to the appeal brief filed September 11, 1992 as "Appeal Brief, Paper No. 24" and to the appeal brief filed November 30, 1992 as "Appeal Brief, Paper No. 30" respectively.

Appeal No. 94-2921  
Application 07/371,937

sufficiency of an application under section 112, first paragraph, enablement requirement, must be judged as of its filing date. It is an applicant's obligation to supply an enabling disclosure without reliance on what others may publish after he has filed an application on what is supposed to be a completed invention. If an applicant cannot supply enabling information, he is not yet in a position to file. In re Glass, 492 F.2d 1228, 1232, 181 USPQ 31, 34 (CCPA 1974). Thus, appellant cannot cure the insufficiency of the present disclosure by relying on publications or other material published after the filing of the present application unless it is shown that such later publications evidence the state of the art existing on the filing date of the application. In re Hogan, 559 F.2d 595, 605, 194 USPQ 527, 537 (CCPA 1977).

We also note that a number of references cited by appellant and the examiner amount to press releases or testimonials which both support and reject appellant's cold fusion theory without providing the necessary details and data from which a person with ordinary skill in the art can qualify the nature of the release. Dagani '92, Chandler and Freedman are illustrative of the former and Hiltz and Browne are illustrative of the latter. These references may only serve as a measure of the pulse of the scientific community with respect to this topic at best.

Appeal No. 94-2921  
Application 07/371,937

However, due to the inadequacies of the respective disclosures, they offer little in terms of their usefulness and acceptance by the scientific community as a whole vis-à-vis the claimed subject matter.

We now proceed to address appellant's more pertinent arguments concerning the examiner's rejection under 35 U.S.C. § 112, first paragraph, as presented in section 6 of the declaration concurrently filed with the appeal brief (Paper No. 24). See the Swartz declaration executed September 8, 1992 (Swartz '92 declaration).

Appellant argues that Will supports the existence of the "cold fusion" phenomena (Swartz '92 declaration, paragraph bridging pages 12-13). It appears that appellant is giving much weight to the fact that substantial amounts of financial resources are being invested in the study of this phenomenon (Swartz '92 declaration, page 13, first full paragraph). However, financial support is only an indicator of the interest in the phenomenon and not scientific proof of its existence. It should also be noted that Will is not a scientific evaluation of the theory of cold fusion. It is only a report of alleged evidence of cold fusion which lacks the details necessary for appropriate review by the scientific community. There is no indication that the scientific community as a whole has accepted



Appeal No. 94-2921  
Application 07/371,937

this evidence. On the contrary, Will acknowledges that the political and financial climate remains generally negative (Will, pages 1-3, second paragraph). Will also places some doubt on the evidence reported in his conclusion by indirectly acknowledging that the alleged excess heat may not be generated by deuterium fusion and that the "possibility that the excess heat is not of nuclear origin can not presently be ruled out" (Will, paragraph bridging pages 1-16 and 1-17).

In the Swartz '92 declaration at pages 16-18, appellant argues that the analysis of data regarding the production of heat from cold fusion experiments by the team of researchers from the Massachusetts Institute of Technology reported by Albagli<sup>8</sup> was faulty, and appellant refers to a number of references to support this contention. Appellant relies principally on a self-authored article (Swartz, Fusion Facts '92) to support his criticism. It is noted that this article provides an alternative analysis of the data presented by Albagli in an attempt to demonstrate that the reported data shows the presence of excess heat. However, the article appears to report on no more than another inconclusive mathematical analysis. The preface to the article (Editor's Note, page 27) indicates that it was primarily

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<sup>8</sup>See the last two lines of page 10 to the first three lines of page 11 of this decision.

Appeal No. 94-2921  
Application 07/371,937

published to present an alternative view. In addition, the article itself fails to reach a decisive conclusion when it states that "[w]hat constitutes 'data reduction' is sometimes but not always open to scientific debate" (Swartz, Fusion Facts '92, page 32).

The appellant's reliance on Noninski (Swartz '92 declaration, page 17) equally fails to support a decisive conclusion since it merely states that a different conclusion may be drawn from the data (Noninski, page 579). Appellant's reliance on Mallove (presumably the Mallove declaration (Paper No. 73), submitted on September 22, 1997, and not the reference) referred to in the Swartz '92 declaration, page 17, is also unpersuasive since he only casually mentions "major problems" with the MIT study (paragraph 6 of the Mallove declaration) without elaborating on those problems.

Appellant also argues that the lack of any observation of large numbers of neutrons, as supported by the examiner's various references, does not negate "anything at all" (Swartz '92 declaration, paragraph 6.5, page 18). The appellant supports his contention by relying on Shani, who is said to allegedly have monitored "stimulated neutron radiation from deuterated materials after said deuterated materials were neutron-irradiated" (Swartz '92 declaration, paragraph 6.5, page 18). Shani appears

Appeal No. 94-2921  
Application 07/371,937

to be another scientific evaluation of the Pons/Fleischmann experiment that does not portend to be a decisive analysis of the Pons/Fleischmann experiment. In fact, it is unclear whether the study may have been done with an entirely different equipment (Shani, page 53). Further, Shani carefully couches his conclusions by stating that the fusion reaction is a possibility and meant to be relevant to interpret the experimental observation of the cold fusion process (Shani, page 57).

Appellant argues that the references cited by the Examiner involved inadequate loading of deuterons, inadequate monitoring of the loading of the deuteron, inadequate sensitivities and lack of sufficient time to load the metal (Swartz '92 declaration, paragraphs 6.8, 6.9, 6.10 and 6.11, respectively). Appellant further argues that these inadequacies may explain the negative results (Swartz '92 declaration, paragraph 6.8, 6.10, 6.11). Appellant's arguments, in our view, indicate a difference of opinion and underscore the inadequacies of his own originally filed specification. Appellant's specification, which is a theoretical discussion in nature, is unclear as to what should be considered the appropriate parameters.

With respect to appellant's arguments concerning the examiner's rejection under 35 U.S.C. § 112, first paragraph, as presented in the first reply brief (Paper No. 434), appellant

Appeal No. 94-2921  
Application 07/371,937

contends that Huizenga mainly references events from 1989 and ignores all positive evidence after 1989 (reply brief, top of page 18). In addition, appellant submits a declaration by Dr. Eugene F. Mallove (Paper No. 73) which merely restates declarant's position as stated in his own publication (Mallove 1991). The Mallove declaration is essentially in support of appellant's criticism of Huizenga (reply brief, top of page 18).

A review of Huizenga indicates that Huizenga did consider, or at least was aware of, activities during the 1990 and 1991 in preparing his book (Huizenga, pages 128, 132, 134, 136, and 143 are illustrative). In addition, Appendix III (pages 242-248) of the book lists a chronology of events up to June 1991 (note that the filing date of this application is June 1989) related to cold fusion issues. Therefore, it appears that Huizenga considered some of the information alleged to be "mysteriously missing" (Mallove Declaration, Paper No. 73, paragraph 14). The declaration by Dr. Mallove is essentially a restatement of a book review he authored (Mallove 1994). It essentially advances his opinion and refers to activities that allegedly have successfully generated cold fusion. However, even the opinion of an expert must be supported by an underlying factual basis. Neither the appellant nor the declarant provide substantive data or analysis which conclusively contradict the ERAB panel findings and which

Appeal No. 94-2921  
Application 07/371,937

is comparable to the detailed analysis criticizing the cold fusion phenomenon in Huizenga.

The appellant next refers to Ex parte Dash, 27 USPQ2d 1481, 1485 (Bd. Pat. App. & Int., 1992) to establish that cold fusion exists. Contrary to appellant's argument, the Dash board at page 1484 of 27 USPQ2d found:

In view of the compelling evidence that neither excess heat nor the traditional nuclear by-products of a fusion reaction have been detected by careful researchers conducting experiments under conditions that are highly analogous to appellants' electrolytic cell and, given the relative ease with which erroneous results can be achieved by failing to observe strict experiment design controls and calibration controls, all of which has been documented in some detail in references A-BK, we find that the examiner has established a reasonable basis for both challenging the operativeness of the claimed method as well as the utility of how to use the claimed method to achieve the fusion result claimed. This results in shifting the burden of proof to appellants. Appellants have produced no evidence to overcome the examiner's position. Accordingly, we will sustain the rejection of claims 1-5 under 35 USC 112, first paragraph, as lacking enablement. We will also sustain the rejection of claims 1-5 under 35 USC 101 as inoperative and lacking utility.

Suffice it to say that rather than establishing cold fusion exists, the Dash decision fully supports the examiner's rejections.

Concerning the issue of reproducibility of results, appellant argues that the examiner "has presented no evidence to contradict the duly supplied papers, Exhibits and submitted

Appeal No. 94-2921  
Application 07/371,937

Declarations" (reply brief, page 21). Appellant proceeds to discuss how "reproducible" has been misconstrued by the Office (reply brief, page 21).

We cannot agree with appellant's position. Huizenga states that "[t]he foundation of science requires that experimental results must be reproducible. Validation is an integral part of the scientific process" (page 222). Although the record reflects the views of a number of scientists that cold fusion is attainable, that viewpoint is confronted by numerous scientists who argue otherwise. We find it to be overwhelmingly clear that, at the time this application was filed, the evidence of irreproducibility of the Fleischmann/Pons experiments and results outweighed the argued evidence of reproducibility.

In light of the above, we find that the examiner has established a reasonable basis for both challenging the asserted operativeness/utility of the claimed apparatus as well as the adequacy of appellant's specification to teach an artisan how to use the apparatus to achieve the result claimed without undue experimentation. Here, in light of the evidence relied on by the examiner, the burden of proof has shifted to appellant to provide objective evidence regarding utility and enablement. Appellant has produced no objective evidence, in our view, that overcomes the examiner's position.

Appeal No. 94-2921  
Application 07/371,937

We have also reviewed the Second Reply Brief filed April 26, 1994 (Paper No. 48) and the Third Reply Brief filed October 16, 1998 (Paper No. 76). These submissions simply restate the arguments addressed above. To the extent that the record contains publications and evidence that some reputable scientists continue to have hope that the claims of cold fusion may ultimately provide a limitless clean and cheap source of energy, we simply observe that there is no publication in the record that even comments on appellant's proposed theory.

In light of the foregoing and after careful consideration of the entire record, for the reasons set forth in the Examiner's Answer, we sustain the rejections of the appealed claims under 35 U.S.C. § 101 and 35 U.S.C. § 112, first paragraph, enablement requirement.

THE REJECTIONS UNDER 35 U.S.C. § 112,  
SECOND PARAGRAPH

Appealed claims 32-43 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which appellant regards as the invention. As emphasized in the answer at page 10, appellant has made no specific and substantive arguments

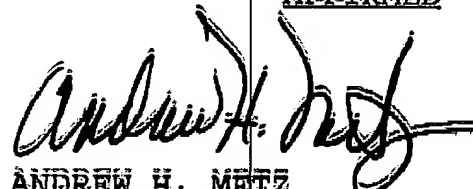
Appeal No. 94-2921  
Application 07/371,937

SUMMARY

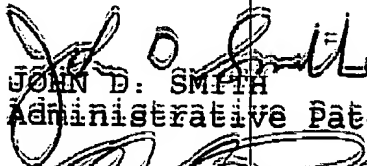
The examiner's rejections of the appealed claims under 35 U.S.C. § 101 and 35 U.S.C. § 112, first and second paragraphs are affirmed. The examiner's rejections of the appealed claims under §§ 102 and 103 of the statute are reversed. The decision of the examiner, accordingly, is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

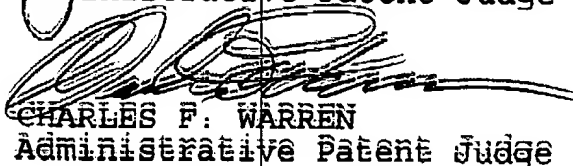
AFFIRMED



ANDREW H. METZ  
Administrative Patent Judge



JOHN D. SMITH  
Administrative Patent Judge



CHARLES F. WARREN  
Administrative Patent Judge

BOARD OF PATENT  
APPEALS AND  
INTERFERENCES

JDS:svt



THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today  
(1) was not written for publication in a law journal and  
(2) is not binding precedent of the Board.

Paper No: 57

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Ex parte MITCHELL R. SWARTZ, pro se

Appeal No: 94-2920  
Application 07/760,970<sup>1</sup>

ON BRIEF

**MAILED**

**JUN 22 1999**

**PAT. & TM. OFFICE  
BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Before METZ, JOHN D. SMITH and WARREN, Administrative Patent Judges.

JOHN D. SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal pursuant to 35 U.S.C. § 134 from the final rejection of claims 25 through 48, all the claims in the application. The subject matter of the claims on appeal is directed to so-called "cold fusion" technology.

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<sup>1</sup>Application for patent filed September 17, 1991.

Appeal No. 94-2920  
Application 07/760,970

Representative claim 25 is reproduced below:

25. In a process for producing a nuclear fusion product from an isotopic fuel using a material, a two-stage method for controlling said reaction which includes in combination:

supplying an isotopic fuel to said material,

loading said isotopic fuel into said material to saturate said material,

then creating a change in the active quantity of said fuel within said material by desaturation,

creating thereby a catastrophic diffusion flux of said isotopic fuel within said material.

Prior art references relied upon by the examiner as evidence of anticipation and obviousness are:

Verschoore	4,935,194	Jun. 19, 1990
Pons et al. (Pons)	WO 90/10935	Sep. 26, 1990
(published PCT Application)		
Rabinowicz et al.	WO 90/14670	Nov. 29, 1990
(Rabinowicz)		
(published PCT Application)		

Besenbacher et al. (Besenbacher), "Search for Cold Fusion in Plasma-Charged Pd-D and Ti-D Systems," 9 Journal of Fusion Energy, no. 3, pp. 315-317 (1990):

References of record relating to cold fusion theories published following the initial report by Fleischmann and Pons ("Electrochemically induced nuclear fusion of deuterium," 261 Journal of Electroanal. Chem., pp. 301-308 (1989)) are:

Aspden	2 231 195 B	Jul. 11, 1990
(United Kingdom patent)		

Appeal No. 94-2920  
Application 07/760,970

Albagli et al. (Albagli), "Measurement and Analysis of Neutron and Gamma-Ray Emission Rates, Other Fusion Products, and Power in Electrochemical Cells Having Pd Cathodes," 9 Journal of Fusion Energy, no. 2, pp. 133-148 (1990):

Alber et al. (Alber), "Search for neutrons from 'Cold Nuclear Fusion'," 333 Phys. A - Nuclei, pp. 319-320 (Springer-Verlag, 1989):

Balke et al. (Balke), "Limits on neutron emission from 'cold fusion' in metal hydrides," 42 Physical Review C, no. 1, pp. 30-37 (1990):

Bishop, "Fusion Brouhaha May Be Settled Soon by Helium Test," The Wall Street Journal, p. B4 (May 10, 1989):

Bosch et al. (Bosch), "Electrochemical Cold Fusion Trials at IPP Garching," 9 Journal of Fusion Energy, no. 2, pp. 165-186 (1990):

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Bush et al. (Bush), "Helium production during the electrolysis of  $D_2O$  in cold fusion experiments," 304 J. Electroanal. Chem., pp. 271-278 (1991):

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Appeal No. 94-2920  
Application 07/760,970

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Appeal No. 94-2920  
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Appeal No. 94-2920  
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Appeal No. 94-2920  
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The appealed claims 25-48 stand rejected under 35 U.S.C.  
§ 112, first paragraph, enablement requirement, and under  
35 U.S.C. § 101 for lack of operability or utility.  
Additionally, appealed claims 25-32, 35, 41-43 and 46 stand  
rejected under 35 U.S.C. § 102 over Pons (WO 90/10935). Appealed  
claims 25-48 also stand rejected over two separate grounds under  
35 U.S.C. § 103: (1) the combination of Pons (WO 90/10935),

Appeal No. 94-2920  
Application 07/760,970

Rabinowicz (WO 90/14670), Verschore and Besenbacher; and (2) the combination of Pons (WO 90/10935) and Rabinowicz (WO 90/14670):

#### BACKGROUND

In the spring of 1989, electrochemists, B. Stanley Pons of the University of Utah and Martin Fleischmann of South Hampton University in England, reported that they had successfully carried out a sustained nuclear fusion reaction at room temperature (i.e., "cold fusion") in a small jar on a laboratory table top. The Pons/Fleischmann experimentation involved operation of a common electrolytic cell with a palladium cathode and a heavy water (deuterium oxide) electrolyte solvent. That palladium was a metal capable of absorbing large amounts of gaseous hydrogen was well known, and in the Pons/Fleischmann "cold fusion" apparatus, deuterium (heavy hydrogen) ions ( $D^+$  ions) allegedly appeared to go into the palladium cathode's crystal lattice about as readily as regular hydrogen ions ( $H^+$ ). However, what generated great skepticism for those skilled in the art were the claims of Pons/Fleischmann that a sustained nuclear fusion reaction at room temperature had been demonstrated which allegedly produced great amounts of energy, for example, four watts of power for each watt of input power.<sup>2</sup>

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<sup>2</sup>See Huizenga, second full paragraph at page ix.



Appeal No: 94-2920  
Application 07/760,970

Much of the record before us in this appeal involves publications describing the contemporaneous attempts of those skilled in the art to duplicate the Pons/Fleischmann results. The experimentation described in these documents constitutes compelling objective evidence justifying the initial disbelief of those skilled workers in the Pons/Fleischmann promise of clean, cheap and abundant energy without side effects from "tabletop" cold fusion.

Exemplary of the initial reports from skilled workers is the statement from the cold fusion team at the United Kingdom Atomic Energy Authority at Harwell (see Cooke at page 5) that after a comprehensive experimental program involving a monumental effort attempting to verify the Pons/Fleischmann cold fusion claims that

[i]n none of these experiments was there any evidence of fusion taking place under electrochemical additions.

and

there was no evidence of excess heat generated by any of their cells.

In similar fashion, a team of scientists at the California Institute of Technology (see Lewis at page 525) indicated that

[w]ith a variety of metallurgical pretreatment procedures and different electrolytes, no evidence has been obtained for any excess enthalpy, neutron, gamma ray, tritium or helium production during electrolysis of  $D_2O$  with palladium cathodes. [Emphasis ours.]

Appeal No. 94-2920  
Application 07/760,970

Likewise, researchers at Sandia National Laboratory (see Ewing at page 1165) reported that

[n]one of the more than thirty cold fusion systems that we investigated produced any detectable neutron emission, with an average statistical uncertainty of 5 neutrons per hour (one standard deviation). No significant neutron bursts were detected, : : :

And from a team of researchers at the Massachusetts Institute of Technology (see Albagli at page 133), it was stated

[w]ithin estimated levels of accuracy, no excess power output or any other evidence of fusion products was detected.

Finally,<sup>3</sup> in criticizing the Pons/Fleischmann report, Huizenga concluded (page 39) that

the craving for fame, notoriety and patent rights took precedence over following the normal scientific procedures.

Against the above background of skepticism and failure of experimenters worldwide to reproduce the results allegedly obtained by Pons/Fleischmann, appellant filed the present application which is said to be "a novel method and system to control and enhance cold fusion reactions" (specification, page 7, last two lines). Basically, appellant's specification involves a novel theoretical explanation for cold fusion grounded

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<sup>3</sup>Numerous other publications referred to in the Answer report similar findings and skepticism from the scientific community regarding the purported results obtained from cold fusion experiments.

Appeal No. 94-2920  
Application 07/760,970

on the catastrophic active medium (CAM) theory (specification, page 15, first full paragraph). More particularly, appellant states that the CAM theory "differs from the other theories in that the fusion reaction is hypothesized to not occur within the metal bulk, but at certain large vacancies and defects by the sudden fractional desaturation of deuterons" (specification, page 15, first full paragraph). Appellant contends that the CAM theory "may offer explanations for the tremendous 'difficulties' observed by many experimenters attempting to repeat experiments, for the bursts of excess energy seen, for the very tardive appearances of both the excess energy and those bursts" (specification, page 16, second full paragraph). It is noted that appellant also appears intent to support the "findings of Fleischmann and Pons" (specification, page 14, first full paragraph).

THE REJECTIONS UNDER 35 U.S.C. § 112  
AND 35 U.S.C. § 101

We address the rejections of the appealed claims under 35 U.S.C. § 112, first paragraph, "enablement requirement," and under 35 U.S.C. § 101 together. The rejection under 35 U.S.C. § 101 for lack of utility is tantamount to a rejection under the how-to-use provision of the enablement clause of the first paragraph of 35 U.S.C. § 112. In re Fouche, 439 F.2d 1237, 1243, 169 USPQ 429, 434, (CCPA 1971) ("If such compositions are in fact

Appeal No. 94-2920  
Application 07/760,970

useless, appellant's specification cannot have taught how to use them."). The lack of utility because of inoperativeness (a question of fact), and the absence of enablement (a question of law) are thus closely related grounds of unpatentability. Newman v. Quigg, 877 F.2d 1575, 1581, 11 USPQ2d 1340, 1345 (Fed. Cir. 1989). The law and the facts here compel us to sustain the examiner's rejections under the above sections of the statute.

With respect to the questions raised under 35 U.S.C. § 101, initially we note the examiner's holding that the utility of the claimed invention is based upon allegations that border on the incredible or on allegations that would not be readily accepted by a substantial portion of the scientific community. See the Answer at page 10. Under such circumstances, as correctly noted by the examiner, objective evidence of operability is required. "Where an applicant predicates utility for the claimed invention on allegations of the sort which are or border on the incredible in light of contemporary knowledge of the particular art, those allegations must be substantiated by acceptable evidence." In re Ferens, 417 F.2d 1072, 1074, 163 USPQ 609, 611 (CCPA 1969). We agree with the examiner that the asserted utility here falls into the category which "borders on the incredible" in light of contemporary knowledge of this art as of September 17, 1991, the date of filing of this application.

Appeal No. 94-2920  
Application 07/760,970

Appellant's claimed process lacks utility because it has not been shown that it does what appellant claims it does, i.e., control and enhance a cold fusion reaction (specification, page 7, last paragraph). Appellant's specification refers to data gathered through a computer simulation to support the application of the CAM theory to explain or predict the cold nuclear fusion process (specification, page 20, last paragraph; page 21, last paragraph; page 22, last paragraph). However, appellant's specification contains no data to show that an apparatus functions to achieve "cold fusion" or how a process is able to control a cold nuclear fusion or transformation apparatus. In short, although appellant claims to know how the process and apparatus works, he has presented no objective evidence that cold fusion has been reproducibly achieved, much less controlled. The specification is simply long on theory and short, indeed void, of relevant data. For example, the specification does not describe what is the basis of the computer simulation. In light of the ample evidence that data concerning the various attempts to run and measure a cold fusion process has been irreproducible, it is not clear how appellant could design a computer simulation that could be relied upon to predict such a process, much less design a working process to control the same. The CAM theory itself does not seem to be espoused by any other member of the scientific community. Thus, it appears to be no

Appeal No. 94-2920  
Application 07/760,970

more than a hypothesis, as recognized by appellant (specification, page 15, second paragraph).

To comply with the enablement requirement of the first paragraph of 35 U.S.C. § 112, a disclosure must adequately present the claimed invention so that an artisan could practice it without undue experimentation. In determining whether any given disclosure would require undue experimentation to make and use claimed subject matter, consideration must be given to such factors as the predictability or unpredictability of the art in question, the relative skill of those in the art, the state of the prior art, the nature of the invention, the presence or absence of working examples, the amount of direction or guidance presented, and the quantity of experimentation necessary.

In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988), citing with approval Ex parte Forman, 230 USPQ 546, 547 (Bd. Pat. App. & Int. 1986).

With respect to each of the above-noted considerations, the record before us leads to the conclusion that undue experimentation would be required to perform the process in the manner claimed. Although the skill of those in this art may be considered relatively high, the numerous contemporary publications in the record before us compel a conclusion that the art in question is highly unpredictable. Moreover, as observed above, the nature of the invention involves an "incredible

Appeal No. 94-2920  
Application 07/760,970

utility" while the present specification presents no working examples nor specific direction or guidance as to how to achieve the claimed results. Indeed, the specification contains no disclosure of any operative embodiment or any of the specific parameters necessary including disclosures regarding compositions, pressures, current strength, voltage, electrical potential, or length of time the process should be carried out. Moreover, the figures describing the apparatus used by this process are mere schematics.

The examiner relies primarily on the publication by Huizenga, Cold Fusion: The Scientific Fiasco of the Century (Rochester, NY, University of Rochester Press, 1992), and, by inference, to the report issued by the United States Department of Energy - Energy Research Advisory Board (ERAB) Panel which Huizenga co-chaired.<sup>4</sup> The examiner notes that this panel "concluded that there is a lack of convincing evidence concerning nuclear reactions of the 'cold fusion' concept type" (Examiner's Answer, page 10, fourth paragraph). The examiner also points out that the strength and credibility of the panel comes from twenty-

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<sup>4</sup>While the report issued by the United States Department of Energy - Energy Research Advisory Board (ERAB) Panel is not part of the record, it is significantly discussed in Chapter VII of Huizenga's publication, Cold Fusion: The Scientific Fiasco of the Century (page 86). The efforts of the ERAB are also cited in Taubes' publication, BAD SCIENCE: The Short Life and Weird Times of Cold Fusion.

Appeal No. 94-2920  
Application 07/760,970

two distinguished members with "expertise in many different scientific disciplines including atomic physics, electrochemistry, geology, nuclear physics, and theoretical physics" (Examiner's Answer, page 11, last paragraph). The examiner refers to other references (namely, Dagani '93, Hadfield and Taubes) to further substantiate the lack of acceptance of cold fusion in the scientific community at the time appellant's application was filed. The examiner indicates that one of the problems with cold fusion is "the lack of reproducibility of the alleged positive results" (Examiner's Answer, page 4, fifth paragraph).

Appellant's response provides a voluminous discussion of a number of references and declarations submitted in an attempt to establish the feasibility of the cold fusion process (Appeal Brief, pages 25-49 and 107-110). Appellant has supplemented this discussion with a Reply Brief filed April 28, 1994 (Paper No. 32), which is in reality a submission of two additional declarations, and a Second Reply Brief filed October 19, 1998 (Paper No. 56). Nevertheless, even in light of the additional submissions, we find that appellant's mere argument does not overcome the examiner's position.

The appellant refers to "growing amount of reputable evidence of record that easily overcomes the few 'negative' showings" (appeal brief, page 34, paragraph 71). We note that



Appeal No. 94-2920  
Application 07/760,970

many references relied upon by the appellant are dated after the filing date of this application. However, the sufficiency of an application under section 112, first paragraph, "enablement requirement," must be judged as of its filing date. It is an applicant's obligation to supply an enabling disclosure without reliance on what others may publish after he has filed an application on what is supposed to be a completed invention. If an applicant cannot supply enabling information, he is not yet in a position to file. In re Class, 492 F.2d 1228, 1232, 181 USPQ 31, 34 (CCPA 1974). Thus, appellant cannot cure the insufficiency of the present disclosure by relying on publications or other material published after the filing of the present application, unless it is shown that such later publications evidence the state of the art existing on the filing date of the application. In re Hogan, 559 F.2d 595, 605, 194 USPQ 527, 537 (CCPA 1977).

We also note that a number of references used by appellant and the examiner amount to press releases or testimonials which both support and reject appellant's cold fusion theory without providing the necessary details and data from which a person with ordinary skill in the art can qualify the nature of the release. Dagani '92, Chandler, Pollack and Freedman are illustrative of the former and Dagani '93, Hiltz, Browne and Hadfield are illustrative of the latter. These references may only serve as a

Appeal No. 94-2920  
Application 07/760,970

measure of the pulse of the scientific community with respect to this topic at best. However, due to the inadequacies of the respective disclosure, they offer little in terms of their usefulness and acceptance by the scientific community as a whole vis-à-vis the claimed subject matter.

We now proceed to address appellant's arguments concerning the examiner's rejection under 35 U.S.C. § 112, first paragraph. Appellant argues that Huizenga mainly references events from 1989 and ignores all positive evidence after 1989 (appeal brief, page 29, paragraph 62). In addition, appellant submits a declaration by Dr. Eugene F. Mallove (Paper No. 20) which merely restates appellant's positions as stated in his own publication, Fire from Ice: Searching for the Truth Behind the Cold Fusion Furor. The Mallove declaration is essentially in support of appellant's criticism of Huizenga (appeal brief, page 29, paragraph 62).

A review of Huizenga indicates that Huizenga did consider, or at least was aware of, activities during 1990 and 1991 in preparing his book (Huizenga, pages 128, 132, 134, 136, and 143 are illustrative). In addition, Appendix III of the book lists a chronology of events up to June 1991 (note that the filing date of this application is September 1991) related to cold fusion issues. Therefore, it appears that Huizenga considered some of the information alleged to be "mysteriously missing" (Mallove Declaration, Paper No. 20, paragraph 12). The declaration by Dr.

Appeal No. 94-2920  
Application 07/760,970

Mallove is essentially a restatement of a book review that was published in Cold Fusion (Mallove, "The publishing fiasco of the century," Cold Fusion, p. 90 (1994)). It essentially advances his opinion and refers to activities that allegedly have successfully generated cold fusion. However, even the opinion of an expert must be supported by an underlying factual basis. Neither the appellant nor the declarant provide substantive data or analysis which conclusively contradicts the ERAB panel findings and which is comparable to the detailed analysis provided by Huizenga in his publication criticizing the cold fusion phenomenon, Cold Fusion: The Scientific Fiasco of the Century.

The appellant next refers to Ex parte Dash, 27 USPQ2d 1481, 1485 (Bd. Pat. App. & Int., 1992) to establish that cold fusion exists. Contrary to appellant's argument, the Dash board at page 1484 of 27 USPQ2d found:

In view of the compelling evidence that neither excess heat nor the traditional nuclear by-products of a fusion reaction have been detected by careful researchers conducting experiments under conditions that are highly analogous to appellants' electrolytic cell and, given the relative ease with which erroneous results can be achieved by failing to observe strict experiment design controls and calibration controls, all of which has been documented in some detail in references A-BK, we find that the examiner has established a reasonable basis for both challenging the operativeness of the claimed method as well as the utility of how to use the claimed method to achieve the fusion result claimed. This results in shifting the burden of proof to appellants. Appellants have

Appeal No. 94-2920  
Application 07/760,970

produced no evidence to overcome the examiner's position. Accordingly, we will sustain the rejection of claims 1-5 under 35 USC 112, first paragraph, as lacking enablement. We will also sustain the rejection of claims 1-5 under 35 USC 101 as inoperative and lacking utility.

Suffice it to say that rather than establishing cold fusion exists, the Dash decision fully supports the examiner's rejections.

Concerning the issue of reproducibility of results, appellant argues that the examiner "has presented no evidence to contradict the duly supplied papers, Exhibits and submitted Declarations" (appeal brief, page 37, paragraph 78). Appellant proceeds to discuss how "reproducible" has been misconstrued by the Office (appeal brief, page 37, paragraph 78).

We cannot agree with appellant's position. Huizenga states that "[t]he foundation of science requires that experimental results must be reproducible. Validation is an integral part of the scientific process" (Huizenga, page 222). Although the record reflects the views of a number of scientists that cold fusion is attainable, that viewpoint is confronted by numerous scientists who argue otherwise. We find it to be overwhelmingly clear that, at the time this application was filed, the evidence of irreproducibility of the Fleischmann/Pons experiments and results outweighed the argued evidence of reproducibility.

Appeal No. 94-2926  
Application 07/766,976

The Reply Brief filed April 28, 1994 (Paper No. 32) and a Second Reply Brief filed October 19, 1998 (Paper No. 56) simply restate the arguments addressed above. To the extent that the record contains publications and evidence that some reputable scientists continue to have hope that the claims of cold fusion may ultimately provide a limitless clean and cheap source of energy, we simply observe that there is no publication in the record that even comments on applicant's CAM theory other than that authored by the appellant himself.

In light of the above, we find that the examiner has established a reasonable basis for both challenging the asserted operativeness/utility of the claimed process as well as the adequacy of appellant's specification to teach an artisan how to perform the process to achieve the result claimed without undue experimentation. Here, in light of the evidence relied on by the examiner, the burden of proof has shifted to appellant to provide objective evidence regarding utility and enablement. Appellant has produced no persuasive objective evidence, in our view, that overcomes the examiner's position.

In light of the foregoing and after careful consideration of the entire record, for the reasons set forth in the Examiner's Answer, we sustain the rejections of the appealed claims under 35 U.S.C. § 101 and 35 U.S.C. § 112, first paragraph, enablement requirement.

Appeal No. 94-2920  
Application 07/760,970

THE REJECTIONS UNDER 35 U.S.C. § 102  
AND 35 U.S.C. § 103

In considering the examiner's rejection of the appealed claims for anticipation (35 U.S.C. § 102) and obviousness (35 U.S.C. § 103), we are guided by the fundamental tenet of patent law that references relied upon to support a rejection under 35 U.S.C. § 102 and 35 U.S.C. § 103 must provide an enabling disclosure, i.e., they must place the claimed invention in the public's possession. In re Payne, 606 F.2d 303, 314, 203 USPQ 245, 255 (CCPA 1979). An invention is not possessed absent some known or obvious way to make it. Id.

Here, the examiner's rejections rely principally on the work of and publication of Pons/Fleischmann which has been substantially discredited by the attempts of those skilled in the art to duplicate the results of their work. Clearly, based on the record before us, the reference to Pons/Fleischmann cannot be relied upon to support the examiner's rejections because it is not an enabling prior art reference. Accordingly, we cannot sustain the examiner's rejections under 35 U.S.C. § 102 and 35 U.S.C. § 103.

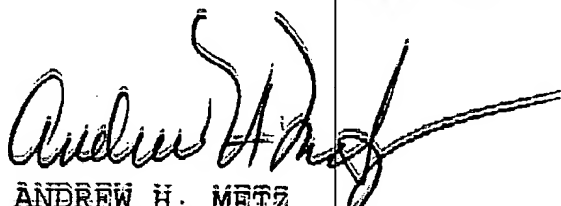
Appeal No. 94-2926  
Application 07/760,970

SUMMARY


The examiner's rejections of the appealed claims under 35 U.S.C. § 101 and 35 U.S.C. § 112 are affirmed. The examiner's rejections of the appealed claims under Section 102 and Section 103 of the statute are reversed. The decision of the examiner, accordingly, is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a);

AFFIRMED

  
ANDREW H. METZ  
Administrative Patent Judge

  
JOHN D. SMITH  
Administrative Patent Judge

  
CHARLES F. WARREN  
Administrative Patent Judge

BOARD OF PATENT  
APPEALS AND  
INTERFERENCES

JDS:sve

No.

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IN THE  
**Supreme Court of the United States**

Mitchell R. Swartz,      *Petitioner*

v.

Q. Todd Dickinson, Director of the USPTO,  
Commissioner of Patents and Trademarks,  
*Respondent*

On Petition For A Writ Of Certiorari  
To United States Court Of Appeals  
For The Federal Circuit  
00-1107 (Serial No. 07/371,937)  
00-1108 (Serial No. 07/760,970)

**PETITION FOR A WRIT OF CERTIORARI**

Mitchell Swartz, ScD, MD, EE  
P.O. Box 81135  
Wellesley Hills, MA  
02481-0001  
(781) 237-3625

January 8, 2001

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Petitioner ["Applicant"] filed two patent applications with the U.S. Patent and Trademark Office [hereinafter "Office"]. The United States Court Of Appeals For The Federal Circuit affirmed the decisions of The Board of Patent Appeals and Interferences for indefiniteness under 35 U.S.C. §112, ¶2 and for putative lack of operability or utility under 35 U.S.C. §101, and therefore putative lack of enablement under 35 U.S.C. § 112, ¶1.

### **QUESTIONS PRESENTED**

1. Whether the Office has replied to duly-submitted un rebutted Declarations with conclusive effect regarding issues of material fact.
2. Whether the Office complied with its own rules regarding MPEP 707.07(j) and 706.03(d).
3. Whether the Office complied with the standards of review regarding definiteness (an issue of fact), under 35 U.S.C. 112 ¶2.
4. Whether the Office complied with the standards of review regarding operability (an issue of fact), under 35 U.S.C. 112 ¶1.
5. Whether the Office complied with the standards of review regarding utility (an issue of fact), under 35 U.S.C.112 ¶1.
6. Whether the Office has violated the United States Constitution.

## **LIST OF PARTIES**

Not all parties appear in the caption of the case on the cover page.

### **THE LIST OF ALL PARTIES PROCEEDINGS IN THE COURT IS AS FOLLOWS:**

Petitioner, previously Appellant and Applicant, Dr.  
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02481-0001.

Respondent is the Office of Patent and Trademarks [the  
U.S. Patent and Trademark Office and the Board of Patent  
Appeals and Interferences, hereinafter "Office"]

The Examiner has been Mr. Daniel Wasil.

The Respondent's attorney of record is Attorney Mark  
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With him has been Albin F. Drost, Acting Solicitor, U.S.  
Patent and Trademark Office, of Arlington, Virginia, for the  
Director of the United States Patent and Trademark Office.  
With him on the brief were John M. Whealan, Acting  
Deputy Solicitor, and Stephen Walsh, Associate Solicitors.  
Of counsel were Maximilian R. Peterson and Nancy C.  
Sluter, Associate Solicitors.

The four Amicus Curiae who have submitted Briefs to the  
court are

Eugene F. Mallove, Sc.D., amicus curiae, New Energy  
Research Laboratory, of Concord, New Hampshire.

Scott R. Chubb, Ph.D., amicus curiae, Research Physicist,  
Research Systems, Inc., of Burke, Virginia.

Hal Fox, Ph.D., amicus curiae, Engineer, Editor, Research  
Scientist, Utah.

Thomas Valone, amicus curiae, Integrity Research  
Institute, Maryland, former Patent Examiner.

The panel in the Court were Judges Dyk, Archer, and  
Plager of the U.S. Court of Appeals for the Federal Circuit.

<b>Table Of Contents Of Petition</b>	
	Page
Questions Presented	
List Of Parties	
Table Of Contents	
Table Of Authorities Cited	
Opinions Below	
Jurisdiction	
Constitutional And Statutory Provisions Involved	
Basis Of Federal Jurisdiction In The Court Of First Instance	
Concise Statement Of The Material Facts	
Issues Of Fact Of Significance To This Petition	
Reasons For Granting The Writ	
1. Whether the Office has replied to duly-submitted un rebutted Declarations with conclusive effect regarding issues of material fact.	
2. Whether the Office complied with its own rules regarding MPEP 707.07(j) and 706.03(d).	
3. Whether the Office complied with the standards of review regarding definiteness (an issue of fact), under 35 U.S.C. 112 ¶2.	
4. Whether the Office complied with the standards of review regarding operability (an issue of fact), under 35 U.S.C. 112 ¶1.	
5. Whether the Office complied with the standards of review regarding utility (an issue of fact), under 35 U.S.C.112 ¶1.	

6. Whether the Office has violated the United States Constitution.	
Summary	
Conclusion	
APPENDIX A - Opinion of the United States court of appeals. - 00-1107	
APPENDIX B - Opinion of the United States court of appeals. - 00-1108	
APPENDIX C - Order about Rehearing denying rehearing- 00-1107	33
APPENDIX D - Order about Rehearing denying rehearing- 00-1107	
APPENDIX E - Claims of Subject Matter	34
APPENDIX F - List Of Ignored Unrebutted Timely-Submitted Declarations	
APPENDIX G - Pleadings, Declarations, and Exhibits Submitted	
APPENDIX H - Fast Fourier Transform Of Vibrating Electrode	

## Table of Authorities

Constitutional Issues	
5th Amendment .....	46 ....
14th Amendment .....	12 ....
Art. I, §8, cl. 8 .....	12 ....
Office Rules	
MPEP 2107.01 .....	38 ....
MPEP 2111.02 .....	43 ....
MPEP 2173 .....	25 ....
MPEP 2173.05(a) .....	26 ....
MPEP 706.03(d) .....	22 ....
MPEP 707.07(j) .....	22 ....
Statute	
18 U.S.C. §2071 .....	17 ....
28 U.S.C. §1291 .....	18 ....
28 U.S. C. §144 .....	24 ....
U.S.C. §145, §146, and §306 .....	13 ....
Federal Case Law	
<i>Atmel Corp. v. Information Storage Devices Inc.</i> [Fed. Cir., No. 99-1082, 12/28/99] .....	29 ....
<i>Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics</i> .....	47 ....
<i>Bloom v. Illinois</i> , 88 Ct. 499 S.Ct. 1477 .....	24 ....
<i>Chelebda v. H.E. Fortuna &amp; Brothers Inc.</i> 609 F.2d 1022 (1st Cir. 1979) .....	21 ....
<i>Cunningham v. Hamilton County, Ohio</i> , 119 S. Ct. 1915 (1999) .....	18 ....
<i>Duncan v. Louisiana</i> , 88 S.Ct.1444 .....	24 ....

<i>E.I. du Pont de Nemours &amp; Co. v. Berkley &amp; Co.</i> [620 F.2d 1247, 1258 n.10, 1260 n.17, 205 USPQ 1,8 n.10, 10 n.17 (8th Cir. 1980)]	42
<i>Environtech Corp. v. Al George, Inc.</i> , 730 F.2d 753, 762, 221 USPQ 473, 480 (Fed. Cir. 1984) .....	36 ....
<i>Ex parte Forman</i> , 230 USPQ 546, 547 (Bd. Pat. App. & Int. 1986) .....	33 ....
<i>Ex parte Porter</i> .....	34 ....
<i>Frontiero v. Richardson</i> , 93 S.Ct. 1736, 411 U.S. 677 .....	46 ....
<i>Gamez v. Toledo</i> , 42 U.S.C. §1983	46
<i>Gass v. Lopez</i> , 95 S. Ct 729; <i>Wood v. Strickland</i> , 95 S Ct 952	46 ....
<i>Genentech Inc. v. Nova Nordisk A/S</i> .....	40 ....
<i>Griffin v. Breckenridge</i> , 91 S Ct 179D .....	46 ....
<i>In re Jolles</i> .....	20 ....
<i>In re Brana</i> .....	36 ....
<i>In re Chilowsky</i> .....	20 ....
<i>In re Eltgroth</i> , 419 F.2d 918, 164 USPQ 221 (CCPA 1970)] .	36 ....
<i>In re Gazave</i> .....	20 ....
<i>In re Marzocchi</i> .....	19 ....
<i>In re Morris</i> .....	21, 34 .
<i>In re Oetiker</i> .....	19, 36, 62 .....
<i>In re Vaack</i> .....	33 ....
<i>In re Wands</i> , 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988) .....	33 ....
<i>Johns Hopkins Univ. v. Cellpro, Inc.</i> .....	35 ....
<i>Lewis v. Bours</i> , 119 Wn.2d 667, 670, 1992 .....	21 ....
<i>Marino v. Hyatt Corporation</i> , 793 F.2d 427, 430 (1st Cir. 1986) .....	34 ....
<i>Mayberry v. Penna.</i> , 91 S.8. ....	24 ....
<i>Morrill v. Tong</i> , 390 Mass. 1207 129 (1983) .....	20 ....
<i>Osborn v. Bank of United States</i> , 22 U.S. (9 Wheat) 738 (1824) .....	12 ....

<i>Raytheon Company v. Roper Corporation</i> [U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592] .....	42 ....
<i>Seattle Box Co., v. Industrial Crating &amp; Packing, Inc.</i> [731 F.2d 818, 221 USPQ 568 (Fed. Cir. 1984)] 2173.05(b) .....	28 ....
<i>Standard Oil Co. (Indiana) v. Montedison</i> [S.P.A., 664 F.2d 356, 375, 212 USPQ 327, 344 (3rd Cir. 1981), <i>cert. denied</i> , 456 U.S. 915, 102 S.Ct. 1769, 72 L.Ed.2d 174 (1982)] .....	42 ....
<i>U. S. v. Price</i> , 86 S. Ct. 1152, 1157 .....	46 ....
U.S. Rep, <u>404</u> , 520-521 (1972) .....	24 ....
<i>United States v. Nixon</i> (1974) .....	46 ....
<i>Weiss v. Weiss</i> , 436 N.Y.S. 2d. 862, 52 N.Y. 2d. 170 (1981) .	46 ....

# **Supreme Court of the United States**

On Petition For A Writ Of Certiorari  
To United States Court Of Appeals  
For The Federal Circuit  
00-1107 (Serial No. 07/371,937)  
00-1108 (Serial No. 07/760,970)

## **PETITION FOR A WRIT OF CERTIORARI**

Petitioner respectfully prays that a writ of certiorari issue to review the two judgments of the United States court of appeals which appear at Appendix A and Appendix B in the present petition.



## **OPINIONS BELOW**

The opinion of the court of appeals [United States Court Of Appeals For The Federal Circuit ("CAFC") 00-1107] appears at Appendix A to this Petition and is published.

The opinion of the court of appeals [CAFC 00-1108] appears at Appendix B to this Petition and is published.

## **JURISDICTION**

The jurisdiction of this Court is invoked under 35 U.S.C. 112 and the United States Constitution [Article I, Section 8, Clause 8, Article III, Article IV, and the Fifth and Fourteenth Amendments].

The date on which the court of appeals decided Petitioner's cases was 11/8/00. A timely petition for rehearing was submitted and was thereafter denied by the court of appeals on 12/8/2000. A copy of the orders denying rehearing appears at Appendix C [CAFC 00-1107] and Appendix D [CAFC 00-1108] in the present petition.

## CONSTITUTIONAL AND STATUTORY PROVISIONS INVOLVED

The Supreme Court is the Petitioner's last and only source of relief. The court of appeals has decided an important federal question that conflicts with more than a dozen relevant decisions of the US Supreme Court and other courts of appeal, and has thus far departed from the accepted and usual course of judicial proceedings.

This Petition involves a direct grant of authority made under Art. I, §8, cl. 8 of the United States Constitution. The provision of Art. I, §8, cl. 8 reads:

**"Congress shall have Power (t)o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries".**

Congress has spoken to "encourage progress" [*Diamond v. Chakrabarty*], encourage ingenuity [447 U.S. 303, 309], and has defined patentable statutory subject matter to include "anything under the sun that is made by man." [S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)]. There is no doubt that would include inventions involving energy efficiency and material monitoring within the meaning of the statute.

The Office of Patents and Trademarks ("Office") has systematically ignored un rebutted timely-submitted Declarations pertaining to issues of fact, and has ignored its own rules, and thus has created a non-uniform and arbitrary standard of review for patentability. In doing so, the Office has acted under color of federal law [*Osborn v. Bank of United States*, 22 U.S. (9 Wheat) 738 (1824)] and in defiance of Congress. Given Art. I, §8, cl. 8 then there is more than the mere possibility that a question of federal law arises sufficient to satisfy the "arising under" jurisdictional authorization of Article III. Given that Congress has spoken, the United States Supreme Court should consider to exercise its supervisory power [*Marbury v. Madison*, 1 Cranch 137, 177 (1803)].

## **BASIS OF FEDERAL JURISDICTION IN THE COURT OF FIRST INSTANCE**

Federal jurisdiction is authorized by Article I, §8, cl. 8, and Article III, Article VI, the 5th and 14th Amendments, and 35 U.S.C. §145, §146, and §306.

In Application Serial Number 07/371,937 ("the '937 application"), Notice of Appeal to the United States Court Of Appeals For The Federal Circuit was made on 10/14/99 which the Board of Patent Appeals and Interferences held in Appeal No. 94-2921. In its Decision regarding 00-1107, on 11/8/00, the court of appeals affirmed the Board's decision for putative lack of enablement under 35 U.S.C. § 112, ¶1, and indefiniteness under 35 U.S.C. §112, ¶2.

In Application Serial Number 07/760,970 ("the '970 application"), Notice of Appeal to the United States Court Of Appeals For The Federal Circuit was made on 10/26/99 after the final Decision (6/22/99) which the Board of Patent Appeals and Interferences held in Appeal No. 94-2920. In its Decision regarding 00-1108, on 11/8/00, the court of appeals affirmed the Board's decision for putative lack of operability or utility under 35 U.S.C. §101 and lack of enablement under 35 U.S.C. §112, ¶1.

[The Notation herein is to the Petitioner's original specification (OS), Appeal Brief to the Board (APB), Board Decision (D), and the Appendix with was with the Appeal Brief in the US Court of Appeals (A). The Appendix for '937 was with case 00-1107. The Appendix for '970 was with case 00-1108.]

## CONCISE STATEMENT OF MATERIAL FACTS

Petitioner ["Applicant"], Mitchell Swartz, ScD, MD, EE is a U.S. citizen and inventor who filed two patent applications claiming invention of a method to monitor the loading of hydrogen (a fuel) into palladium (a metal which fills such as a sponge fills with water) and a method involving changing that loading by a two-step method. These patent applications [S.N. 07/371,937 and S.N. 07/760,970 are the subject matter of this Petition.

S.N. 07/371,937 ("the '937 application") is a method, generally speaking, for easy monitoring of hydrogen loading which uses a vibration of the loaded metal. The original specification and claims solves the long-standing problem of monitoring the fuel within the metal remotely and non-invasively. This is of great utility because in the past it was necessary to mechanically interrupt the electrical circuit and then to physically move and weigh the loaded metal. Previously, such cumbersome invasive monitoring was complicated, took several minutes, and required uncoupling the electrical circuit "thereby not only stopping the reaction, but also cross-contaminating both the cathode and the laboratory" (A164). In '937, means are provided to vibrate the loaded metal which is then monitored to reveal information about its weight and, therefore, the quantity of fuel loaded into the material.

Claim 32 (Appendix E) claims monitoring the material, using at least one vibrational mode (natural frequency) which is the subject matter constituting the invention. The original specification and Claims 32-43 complied and conformed with the Patent Act by teaching the subject matter defined by each of the rejected claims, including the vibrational cathode (A166-A167), monitoring subsystems (A168-A170), viscosity, damping, surface materials (A169), and coupling to a large mass, and then set forth the best

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(\*\*\* -1 ) Appendix G shows a fast fourier transform (FFT) spectrogram of vibrations of one actual device, using the teachings of '937. The figure is from an article in a journal, peer-reviewed by those familiar with the state-of-the-art at the time the present original specification and claims were filed.

mode contemplated (\*\*-1). The invention '937 conforms to known physics (A170-A173) and has been shown to be operable using the teachings of the original specification and claims. Petitioner's Declarants have affirmed definiteness and utility.

S.N. 07/760,970 ("the '970 application") is a two-stage method to control loading. Claim 25 (Appendix E) claims a two-stage method using a first stage of electrode loading, followed by, a second stage of sudden rapid ("catastrophic") flow of the loaded hydrogen within the metal. Petitioner taught in the original specification and claims how this apparatus works and presented objective detailed evidence and experimental data of the invention. Specifically, Petitioner taught about loading [Claim 25, lines 2 and 3] on pages OS 15-16, 19, 20, 21, 22, 24, 27, 28, and 34 in the original specification, and on pages 5-6, 11, 13-14, 16, 19, 28, 42-45, 48-50, 55, 61, 65-67, 70, 72, 78, 91, 95-98, 106, 110, 113, 115, 119-126, 128, 130, 133, 135-136, and 143 of the Appeal Brief before the Board. Petitioner taught about generating movements of isotopic fuel in the loaded metal ["flux", claim 25, lines 1, 4, 5] on pages OS 15-16, 19, 20, 21, 22, 24, 27, 28, and 34 in the original specification, and on pages APC 5, 10-11, 6, 43, 45-46, 54, 65-68, 71-73, 98, 116, 119, 123, 134-136, and 139-141 of the Appeal Brief before the Board.

## REASONS FOR GRANTING THE WRIT

### I

Briefly, the gravamen of this case is that The Office has not properly followed its own standards of review regarding patentability, has shown abuse of discretion and has failed to comply with previous Orders by the Board for a response to said Declarants regarding material matters of fact (operability and utility).

In '937 and '970, the putative "lack of operability" under 35 U.S.C. §112, ¶1 and "lack of utility" under 35 U.S.C. §101 has only been made by ignoring the original specification and claims, by ignoring the timely-submitted un rebutted Declarations, by ignoring scores of Exhibits and references, and by ignoring the Office's own rules, thus creating an arbitrary standard of review for patentability.

In '937, the putative "indefiniteness" under 35 U.S.C. §112, ¶2 has only been made by ignoring the reasoning of several decisions, the Office's own rules, and what those who were skilled-in-the-art at the time the original specification and claims were filed have stated [*In re Morris*] in un rebutted Declarations [*In re Marzocchi*] produced as required [*In re Oetiker*] which fully addressed all matters criticized by the Office regarding matters of fact.

1. The Office has not provided any reason to doubt the objective truth of any of the Declarants' [or *Amicus Curiae*'s] statements relied on for enabling support. No basis exists for a rejection under either section 112, ¶1 for operability lack of enablement or section 101 for lack of utility [*Environtech Corp. v. Al George, Inc.*, 730 F.2d 753, 762, 221 USPQ 473, 480 (Fed. Cir. 1984)].

2. Furthermore, the Office and the court of appeals have made no mention of exactly why substantive evidence in the form of Declarations in the record regarding matters of fact have not been substantively addressed.

3. In addition, the Office and the court of appeals have made no mention of why five Orders by the Board [with authority pursuant MPEP §1211] explicitly requiring a response to these relevant Declarations regarding material matters of fact (operability and utility) were ignored. One remand stated, "Further, the examiner should explain why these 'filings' and 'references' are inadequate in evidentiary weight, to overcome the evidence proffered by the examiner."

4. This Court has ruled that any *pro se* litigant is entitled to less stringent standards [U.S. Rep volume 404, pages 520-521 (1972)], but the Office has ignored its own standards.

5. It is submitted that if the Office must rely upon reference to art cut of a cloth not even made from the original specifications and claims, and must systematically ignore un rebutted duly-submitted Declarations, then the Office's position must indeed be rather weak -- which must dictate allowance of the present inventions.

II

This case has great and compelling importance when measured by either the particular constitutional mandate of Art. I, §8, cl. 8 or the number of people dependent upon energy monitoring, efficiency and utilization. The Office has not provided any authority for which it has ignored the fact that Congress has "encourage(d) progress" [*Diamond v. Chakrabarty*], encouraged ingenuity [447 U.S. 303, 309] and has defined patentable statutory subject matter to include "anything under the sun that is made by man." [S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)] which must include inventions involving energy efficiency and material monitoring.

This case also involves important issues which resolve important questions separate from the merits of the case, and if necessary is also submitted under the collateral order doctrine [28 U.S.C. §1291; also *Cunningham v. Hamilton County, Ohio*, 119 S. Ct. 1915 (1999)].

QUESTIONS PRESENTED

- 1. Whether the Office has replied to duly-submitted un rebutted Declarations with conclusive effect regarding issues of material fact.**

I

The decisions reject the reasoning of *Ex parte Porter* because they are inconsistent with, and do not address the facts averred in timely-submitted un rebutted Declarations (\*\*-2). Petitioner submits that the Office has ignored, and failed to reply to, more than a dozen duly-submitted Declarations containing substantive rebuttal evidence [*In re Marzocchi*]. These had conclusive effect regarding issues of material fact, and were put forward by Petitioner as required [*In re Oetiker*]. In '937, the un rebutted Declarations

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(\*\*-2) In '937, the un rebutted Declarations are in the record at A8, A12, A18, A44, A49, A62, A66, A72, A74, A77, A85 [Appeal Brief, 00-1107]. In '970, the un rebutted Declarations in the record at A8, A12-A23, A32-A39 [Appeal Brief, 00-1108]. Many were filed before the Final Notice of Appeal, and others were included with the Appeal Briefs to the Board of Patent Appeals. The Office received these Declarations, as proven by the Office's date-stamps, and as confirmed by the five remand Orders (A82-A89) by the Board to the Office for a response to the relevant Declarations on these very matters of fact.

[A8, A12, A18-A43, A44-A48, A49, A62, A66, A72, A74, A77, A85] confirm definiteness and utility as defined by claim 32, substantially and fully [*In re Gazave; In re Chilowsky; In re Jolles*]. In '970, the unrebutted Declarations [A8, A12-A23, A32-A39 [Appeal Brief, 00-1108] confirm operability and utility as defined by claim 25, substantially and fully [*In re Gazave; In re Chilowsky; In re Jolles*]. The Declarations demonstrate validation of the Applicant's claimed subject matter and therefore enablement.

Petitioner's Declarants, skilled-in-the-art at the time the original specifications and claims were filed, have probative value because they are scientists, researchers, editors, and a Patent Examiner and thus are authorities. The unrebutted Declarations fully addressed and contradicted all matters of fact -- operability, utility and definiteness. The Declarants affirmed that the invention operates as stated, was correctly taught in the original specification and claims, and that a person of ordinary skill-in-the-art would have understood the inventor to have been in possession of the claimed invention at the time of filing. Nothing has been presented which differs or rebuts the Declarations [or the *Amicus Curiae* Briefs of Drs. Chubb, Mallove, Fox, and Mr. Valone]. The Office has not indicated any controlling authority to change its standards of review mandated for unrebutted substantive Declarations regarding material issues of fact.

## II

The decisions reject the reasoning of other Appeals Court in *Marino v. Hyatt Corporation*, 793 F.2d 427, 430 (1st Cir. 1986), *Morrill v. Tong*, 390 Mass. 1207 129 (1983), *Chelebda v. H.E. Fortuna & Brothers Inc.* 609 F.2d 1022 (1st Cir. 1979) by ignoring the unrebutted sworn Declarations despite being Obligated to assume that the unrebutted Declarations are true [*Lewis v. Bours*, 119 Wn.2d 667, 670, 1992]. The Declarants have been ignored because they refute the Office's unsupported position and prove definiteness in '937, and utility and operability in '970. Only by ignoring the Declarations can the Office purport that a material cannot "vibrate" ['937] and that there is no "loading" ['970].

## III

1. The decisions reject the reasoning of *Ex parte Gray* [10 USPQ2d 1922, 1928 (Bd. Pat. App. & Inter. 1989)] because



there was evidence of definiteness in '37 and operability and utility in '970 and '937, beyond the detailed specifications, in the form of corroboratory expert testimony including un rebutted Declarations and *Amicus Curiae* Briefs. The Office and the decisions should have indicated which, if any, of the averments in the Declarations were formally considered and, if so, how they reached their conclusion or how the Declarations failed to overcome the purported *prima facie* case initially established by the Office. Simply put, it cannot be determined from the record which -if any- of these submitted averments by the Declarants and *Amici Curiae* regarding definiteness, operability and utility have been formally considered by the Court.

2. The decisions reject the reasoning of *In re Morris* because the interpretation of definiteness, operability, and utility are predicated upon that which one who is skilled-in-the-art would reach, requiring comment upon the statements made by the probative Declarants and *Amicus Curiae*. Petitioner has the right to expect that proffered Declarations be read, and un rebutted Declarations be respected as they did fully address all matters criticized by the Office. The decisions have erred by omitting exactly why this factual, substantive and engineering evidence in the record regarding definiteness has not been addressed.

#### IV

The failure to respond violates the Office's own rules and five remand Orders (e.g. A82-A89) by the Board to the Office for a response to the relevant Declarations on these very matters of fact. The Office has also ignored five Orders by the Board explicitly requiring a response to these relevant Declarations. At least one remand explicitly stated, "Further, the examiner should explain why these 'filings' and 'references' are inadequate in evidentiary weight, to overcome the evidence proffered by the examiner." The 'filings' included the Declarations. Attention is directed to the fact that the Board had the authority to Order the Office to substantively respond pursuant to MPEP §1211, but the Office has not responded with specificity and substance as the Board ordered. Similarly, the Office and decisions have not stated this has been simply ignored.

**2. Whether the Office complied with its own Rules regarding MPEP 707.07(j) and 706.03(d).**

**I**

In '937, Claims 32 through 43 stand rejected pursuant to 35 U.S.C. 112, ¶2 for indefiniteness. However, this rejection is not unreasonable. Petitioner (then Applicant), *pro se*, requested "constructive assistance and suggestions from the Examiner in drafting one or more acceptable claims [pursuant to MPEP 707.07(j)] and in making constructive suggestions [pursuant to MPEP 706.03(d)]". The next substantive response received was the Final Rejection, which was accompanied by constructive suggestions. To comply with the Examiner, the claims were rewritten using the minor changes that the Examiner had recommended by telephone and by written communication. All changes were made *per*, and did conform to, the Examiner's own suggestions. The changes were trivial. The wording and scope of the rewritten claims was composed in the language of the specification and claims of the original disclosure, did not raise new issues or contain any new matter, and made no new claim limitation.

As discussed with the Examiner [Appendix D] and as fully discussed in the Appeal Briefs before the Board (2/28/94), they contained the precise suggestions which examiner stated would overcome said definite rejection. The final proposed claims were immediately submitted for entry pursuant to MPEP 707.07(j) and MPEP 706.03(d), and Applicant provided substantive rebuttal evidence before the Notice of Appeal [*In re Marzocchi*] including Declarations as required [*In re Oetiker*]. As the Federal Court admits:

**"Appellant gave substantive arguments for entry including specific and substantial arguments against the rejection."**

**II**

The final proposed claims were not entered as they have been for other applicants and as should be accepted by the standards of review regarding patentability. As the *Amicus Curiae* Brief of Thomas Valone (Integrity Research Institute, Washington, DC; former Patent Examiner) has stated,

"it needs to be noted that the suggestion of the examiner to add language to these two claims in order to overcome the rejection under 35 USC 112 second paragraph and then following with a refusal to enter the exact language suggested because of a "new matter" or "new issue" accusation amounts to not dealing honestly with the appellant and not the type of behavior that is normally endorsed by the Patent Office. It also does not "help our customers to get patents" as in the present Office motto. From my experience at the Patent Office such deception of an applicant on the part of the examiner was never tolerated by a supervisor."

### III

As a result, the Office has not complied with the requirements of MPEP 707.07(j) and 706.03(d), and has rejected the reasoning of the Supreme Court that a *pro se* litigant is entitled to less stringent standards [U.S. Rep, 404, 520-521 (1972)] especially because in this case, the Office has not followed its own standards.

The Petitioner is entitled to an impartial tribunal [28 U.S. Code Section 144, *Mayberry v. Penna.*, 91 S.8.; *Bloom v. Illinois*, 88 Ct. 499 S.Ct. 1477; *Duncan v. Louisiana*, 88 S.Ct.1444] and equal protection of the laws and fair application of the standards of review. The refusal to enter the exact language in Amendments (A187) suggested by the Examiner to overcome indefiniteness, when said amendments added neither new matter nor issues, and could not have been offered before the receipt of suggestions pursuant to MPEP 707.07(j) and 706.03(d), and which responded to, and adopted, each suggestion made by the Examiner (A85-A90, A124-131, also A83-A84) is unfair.

**3. Whether the Office complied with the standards of review regarding definiteness under 35 U.S.C. §112 ¶2.**

I

For '937, the Office has purported "indefiniteness" of the claims under 35 U.S.C. §112, ¶2. Petitioner submits that this is not true according to the preexisting standards for review, and because the initial rejection of Claims 32 and 35-41 over Johnson under 35 U.S.C. 102 could not have been made and could not have been sustained through the Final Rejection, had the invention truly been without definiteness (\*\*-3). Also ignored, and as important, the Claims were developed after the precise suggestions which the Examiner stated would overcome said rejection pursuant to 707.07(d).

II

1. The decision rejects the reasoning of *Ex parte Gray* [10 USPQ2d 1922, 1928 (Bd. Pat. App. & Inter. 1989)] because in '937 there is evidence of definiteness in the form of expert testimony from Drs. Chubb, Mallove, Fox, Bass, Swartz and Mr. Straus (A44-A48), Rotegard, and Valone with substantial argument [*In re Marzocchi*, *In re Oetiker*]. The Declarants with probative value fully addressed all matters criticized by the Office regarding definiteness (A90-A99), substantially and extensively [*In re Gazave*; *In re Chilowsky*; *In re Jolles*]. They prove that a person of ordinary skill-in-the-art would have understood the Petitioner to have been in possession of the claimed invention at the time of filing, and demonstrate that the original specification and

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(\*\*-3 - According to *In re Hammack* [427 F.2d 1384 n.5, 166 USPQ 209 n.5 (CCPA 1970)] "...indefiniteness in claim language is of semantic origin". Definiteness is the opposite of indefiniteness, and under 35 U.S.C. 112 ¶2, definiteness is that characteristic of a patent claim in which claim language makes the scope of the claim clear to a person skilled in the art to which the invention pertains [MPEP 2173, MPEP 2173.02, MPEP 2173.05(a)], in light of the specification.

As a judicial test, "invention" - i. e., "an exercise of the inventive faculty," *McClain v. Ortmyer*, 141 U.S. 419, 427 (1891) - has long been regarded as an absolute prerequisite to patentability [*Keystone Driller Co. v. Northwest Engineering Corp.*, 294 U.S. 42 (1935); *Sharp v. Stamping Co.*, 103 U.S. 250 (1880); *Hotchkiss v. Greenwood*, 11 How. 248 (1851)], and in 1952 that Congress, in the interest of "uniformity and definiteness," articulated the requirement in a statute, [425 U.S. 219, 226] framing it as a requirement of "nonobviousness." [*Dann v. Johnston*, 425 U.S. 219 (1976) 425 U.S. 219 No. 74-1033]

claims were precise, clear, correct, and unambiguous [pursuant to MPEP 2173.05(a)].

2. The decision rejects the reasoning of *In re Morris* [and *Ex parte Porter*] because definiteness must be predicated upon that which one who is skilled-in-the-art would reach. The Office, like the Court, is Obligated by law to assume that such Declarants' un rebutted assertions on the relevant factual statements are true [*Lewis v. Bours*, 119 Wn.2d 667, 670, 1992], but has not. Nothing has been presented which differs or rebuts the Declarations. It must be reasonably concluded that the Declarations remain ignored in their factual, substantive content because they precisely refute the Decision's incorrect statements and erroneous conclusion.

### III

1. The decision rejects the reasoning of *In re Prater* [415 F.2d 1393, 162 USPQ 541 (CCPA 1969)] because pending claims must be given the broadest reasonable interpretation consistent with the original specification claims and not cut of cloth of other art. Simply put, the claimed invention must be the focus of the definiteness requirement as this Court has previously found.

"Respondents' claims must be considered as a whole, it being inappropriate to dissect the claims into old and new elements and then to ignore the presence of the old elements in the analysis."

[*Diamond v. Diehr*, 450 U.S. 175 (1981), 450 U.S. 175, No. 79-1112, Dec. March 3, 1981]

*Amicus Curiae* Valone (Integrity Research Institute, Washington, DC; former Patent Examiner) has stated,

"10. Clearly, one of the most important points regarding Office rejections under 35 U.S.C. 101 and 35 U.S.C. 112, first paragraph, is that the claimed invention should be the focus of the utility requirement. "Each claim therefore, must be evaluated on its own merits for compliance with all statutory requirements" (MPEP 2107.01, I.). In this case on appeal (00-1107), claim 32 claims a method for monitoring, with three method steps (mechanically coupling, exciting said vibration, and following the frequency) that can be easily understood to persons with normal engineering skill in any art."

Attention is directed to the fact that the Office has systematically refused to accurately discuss the invention as taught in the original specification and claims - to wit, a vibrator to monitor loading. Instead, the Office has fabricated "indefiniteness" along with its fabrication of, and attack upon the words "excess heat", which were not even mentioned in '937.

2. The decision rejects the reasoning of *Ex parte Ionescu* [222 USPQ 537, 539 (Bd. App. 1984)] because if there were another basis for indefiniteness not addressed, then the Examiner was Obligated to have further explained what the rejection was.

3. Rule MPEP 707.07(g) specifically requires that the Office must give a "full development of reasons" why its use of "excess heat", not even mentioned in either the original specification or claims, makes the present invention indefinite. It has not. The Office has failed its own standards of review because by its own rules, it was Obligated to provide reasons why the terms in the claims and/or scope of the invention are unclear "in a positive and constructive way, so that minor problems can be identified and easily corrected, and so that the major effort is expended on more substantive issues".

#### IV

The decision rejects the reasoning of *Atmel Corp. v. Information Storage Devices Inc.* [Fed. Cir., No. 99-1082, 12/28/99] because in '937 definiteness has been absolutely corroborated by peer-reviewed publications by the Petitioner [including those in *Fusion Technology*, published by the American Nuclear Society] which demonstrate acceptability of the claim language by those of ordinary skill-in-the-art.

#### V

1. The decision rejects the reasoning of the decision in *Seattle Box Co., v. Industrial Crating & Packing, Inc.* [731 F.2d 818, 221 USPQ 568 (Fed. Cir. 1984)] 2173.05(b)] because imprecise claim language may not automatically render the claim indefinite under 35 U.S.C. 112, second paragraph.

2. The decision rejects the reasoning of *In re Zletz* [893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989)] because the specification clearly and explicitly stated the meaning of the terms in the claims. As Petitioner argued, the words were defined and were fully-discussed in the original specification

and the cited art. Most importantly, the claims of '937 were definite after the precise suggestions examiner stated would overcome said rejection. Corroborating this, the Examiner used these words for more then a decade without any trouble -- until the matter was invented "tongue in cheek" *nunc pro tunc*.

3. The decision rejects the reasoning of *In re Wands* [858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed.Cir.1988)] because Petitioner fully complied with the definiteness requirement of 35 U.S.C. §112. The original specification of '937 and Claims 32-43 complied and conformed with the Patent Act. They taught the subject matter defined by each of the rejected claims, set forth the best mode contemplated, and distinctly point out and claim the subject matter which constitutes the invention.

#### VI

1. The Office has ignored its own Rules. As discussed by Dr. Valone in his *Amicus Curiae* Brief, there was definiteness because the preamble of claim 32 recites the purpose of the process, the body of the claim does not refer back to the preamble, and the process steps are able to stand alone (pursuant MPEP 2111.02). The mere fact that a term or phrase used in the claim has no antecedent basis in the specification disclosure does not mean, necessarily, that the term or phrase is indefinite.

2. Claims 32, 38, 40, and 35 do not even mention "nuclear" in the preamble. The rejection of those claims based upon the other art cited by the Office demonstrates the Office's bias because there can logically be no such arguments by the Office. As the *Amicus Curiae* Valone has stated,

"14. Regarding the extensive argument about cold fusion, (App. Bd. p. 12-26), it is important to note that claim 32 does not have anything to do with cold fusion, nuclear fusion, nor "excess heat." Therefore, such arguments on the part of the Appeals Board is irrelevant and perhaps an effort at obfuscation based on the prevailing Patent Office management attitude toward any reference to "cold fusion."

#### VII

3. *Amicus Curiae* Valone (former Patent Examiner) has stated,

"15. To illustrate, the METHOD OF MONITORING a heartbeat was used centuries before it was even known what a heartbeat consisted of. Therefore, it is not logically necessary for either party in this case to argue the merits of cold fusion as it was known in 1989. The appellant is simply claiming a METHOD FOR MONITORING the loading of an electrode, which appears to be very similar to but distinct from Johnson."

"16. To clarify further, a METHOD FOR MONITORING a disease does not become useless if there is no disease that can be found. The Appeals Board is arguing as if the inventor must prove that the disease exists, which makes no logical sense in the case of claim 32.

"17. Claim 32, which does not suffer from any justified rejection at this time, should be allowed to mature into a patent."

**4. Whether the Office complied with the standards of review regarding operability under 35 U.S.C. §112 ¶1.**

**I**

In '970, the Office has made an improper and reversible rejection under 35 U.S.C. §112 ¶1 for purported lack of operability because the Office has not complied with the standards of review for patentability with respect to resolving operability. The Office has ignored both the original specifications and claims and submitted Declarations (\*\*\*-4) which have provided evidence of operability. As a result, the decisions are inconsistent with, and reject the reasoning of, many other Court decisions.

**II**

The decision rejects the reasoning of *In re Hogan* [559 F.2d 595, 60S, 194 USPQ 527, 537 (CCPA 1977)] because Petitioner's exhibits included published confirmations of the teachings taught years earlier in the original specification and claims. These prove that Petitioner was correct on the filing date of the application. Each and every technology,

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\*\*\*-4 These un rebutted Declarations were timely received, as confirmed by five Remands with Orders to the Examiner to respond {e.g. A82-A89}.



pertaining to each line of Claim 25, has passed peer-review by those skilled-in-the-art - and thus has achieved validation.

In Claim 25, lines 2 and 3, Petitioner claimed how to load the hydrogen ["fuel"; discussed on pages OS10, 17, 19, 29, 32, and 34 of the original specification, also APB5-6, 11, 13-14, 16, 19, 28, 42-45, 48-50, 55, 61, 65-67, 70, 72, 78, 91, 95-98, 106, 110, 113, 115, 119-126, 128, 130, 133, 135-136, and 143]. This loading technology, consistent with conventional physics, has since been published in peer-reviewed journals [e.g. Swartz, M., *Fusion Technology*, 22, 2, 296-300, 1992; Swartz, M., *Fusion Technology*, 26, 4T, 74-77, 1994; Swartz, M., *Fusion Technology*, 32, 126-130, 1997]. Therefore, supplying and loading a material with an isotopic fuel is not unproven "theory" or "incredible"; as the Board's eleven page Answer purports (A128), but can be elicited using the teachings of the original specification and claims (\*\*-5).

In Claim 25, lines 1, 4, 5, Petitioner claimed how to create a flow (flux) of the loaded material after loading [discussed on pages OS15-16, 19, 20, 21, 22, 24, 27, 28, and 34 of the original specification; also APB5, 10-11, 6, 43, 45-46, 54, 65-68, 71-73, 98, 116, 119, 123, 134-136, and 139-141]. This diffusion technology, consistent with conventional physics, has since been published in peer-reviewed journals [e.g. *MIT RLE Progress Report*, P. Hagelstein, M. Swartz, 139: 1, 1-13 (1997), Swartz, M., 1994 Vol. 4. "*Proceedings: ICCF4*", sponsored by EPRI and the Office of Naval Research, and Swartz, M., 1997, *Journal of New Energy*, 1, 4, 26-33, Swartz, M., 1998, *Transactions of the American Nuclear Association*, Nashville, Tenn, 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85]. Therefore, internal diffusion of isotopic fuel can be elicited using the teachings

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(\*\*-5) As the *Amicus Curiae* Brief of Hal Fox (Editor, Fusion Information Center, Inc., Utah) states, " ... there are a variety of lattice structures ... that can be "loaded" ...". The *Amicus Curiae* Brief of Scott R. Chubb, Ph.D (Research Physicist, Washington, D.C.) states, "... in 1991 ... during this time, it became apparent that the loading of deuterium into palladium (Pd) was playing a critical role ..."

(\*\*-6) As *Amicus Curiae* Chubb has stated, "... each deuterium nucleus (D) may effectively dissociate from its electron and freely flow through the metallic substrate."

of the original specification (OS-Figs.13,14;A104-A105) and claims (\*\*-6).

This two-step method should be patentable based upon opinions of this Court.

"Transformation and reduction of an article "to a different state or thing" is the clue to the patentability of a process claim that does not include particular machines."

[Gottschalk v. Benson, 409 U.S. 63 (1972), 409 U.S. 63, No. 71-485, Dec. Nov. 20, 1972]

"Industrial processes such as this ["a physical and chemical process (which involves) the transformation of an article .... into a different state or thing"] are the types which have historically been eligible to receive the protection of our patent laws. [450 U.S. 175, 185]"

[Diamond v. Diehr, 450 U.S. 175 (1981), 450 U.S. 175, No. 79-1112, Dec. March 3, 1981]

### III

1. The decision rejects the reasoning of *Ex parte Gray* [10 USPQ2d 1922, 1928 (Bd. Pat. App. & Inter. 1989)] because there was evidence of operability in the form of un rebutted expert testimony from Petitioner's Declarants (A18,A44,A49,A62,A66,A72,A74,A77,A85) and others (A10-A21; A4-A36; A90-A116; A75,A78-A80)[ and *Amicus Curiae* (\*\*-7)]. Petitioner's Declarants corroborate operability and have demonstrate '970, a two-stage method of the controlling loading [A140, A193], with four method steps to control that loading, was taught in a form that can be easily understood to persons with normal engineering skill in any art. They demonstrate that, as of the filing date, scientists skilled-in-the-art consider loading, diffusion, and flux to be real and to have been taught correctly in the original specification and claims.

2. The decision rejects the reasoning of *In re Morris* [also *Ex parte Porter*] because the interpretation of an issue of fact, like operability, must read on the original specification and

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\*\*\*-7) The Declarations were also supplemented with relevant Exhibits from the US Navy, US national laboratories, NASA, CEREM, SRI, EPRI, and many other scientific and research organizations.

claims 25-48 and be predicated upon the Declarations (A10, A21-A36;A37-A116) to a conclusion consistent with what one who is skilled-in-the-art would reach. The Declarants have fully addressed all matters criticized by the Office regarding operability, substantially and extensively [*In re Gazave*; *In re Chilowsky*; *In re Jolles*]. Nothing has been presented which differs or rebuts the Declarations.

3. The decision rejects the reasoning of *Marino v. Hyatt Corporation*, 793 F.2d 427, 430 (1st Cir. 1986), *Morrill v. Tong*, 390 Mass. 1207 129 (1983), *Chelebda v. H.E. Fortuna & Brothers Inc.* 609 F.2d 1022 (1st Cir. 1979) by ignoring the un rebutted Declarations despite being Obligated by law to assume that such Declarants' un rebutted assertions (A10, A21-A36;A37-A116) are true [*Lewis v. Bours*, 119 Wn.2d 667, 670, 1992] with response to a conclusion consistent with what one who is skilled-in-the-art would reach.

#### IV

1. The decision rejects the reasoning of *In re Wertheim* [541 F.2d at 263, 191 USPQ at 97] because the Office failed to present "evidence or reasons why the Declarants, skilled-in-the-art, would not recognize in the disclosure a description of the invention defined by the claims" ( \*\*\*-8). Instead, the Office's decision and notions are fabricated without any substantive underlying factual inquiries [*Johns Hopkins Univ. v. Cellpro, Inc.*] about the present invention - and are made solely from cloth cut of other art. Instead, the decision is void of any discussion whatsoever of any of the Declarations on any of matter of operability. No mention is made of why this evidence in the record proving operability, and supporting Applicant, has not been addressed.

2. The decision rejects the reasoning of *In re Brana* [51 F.3d at 1566, 34 USPQ2d at 1441] and *In re Marzocchi* [439

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\*\*\*-8 The Declarants are not even mentioned but they are ignored regarding their factual evidence pertaining to substantive and engineering content because they precisely refute and contradict the Office's statements and opinion (e.g. A90-A99; *Amicus Curiae* Brief of Dr. Eugene Mallove) and thus demonstrate operability and utility (*vide infra*), and enablement (a matter of law). Thus, it simply cannot be determined from the record which - if any - of these un rebutted facts regarding operability have been formally considered. The Office (and the decision) should have indicated which, if any, of the averments in the Declarations were formally considered and, if so, how they reached their conclusion.

F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971)] because the Office cannot a dual rejection (utility and operability) unless it has reason to doubt the objective truth of the statements contained in the written description because these are questions of fact [*In re Brana*; *In re Eltgroth*, 419 F.2d 918, 164 USPQ 221 (CCPA 1970)]. Petitioner's Declarants [A4-A9, A10-A36; confer also witnesses at A75, A78-A80 and *Amicus Curiae* Briefs] prove that Applicant was correct on the filing date of the application [*In re Hogan*, 559 F.2d 595, 60S, 194 USPQ 527, 537 (CCPA 1977)] to one skilled-in-the-art [*Atmel Corp. v. Information Storage Devices Inc.*, Fed. Cir., No. 99-1082, 12/28/99].

3. The decision rejects the reasoning of *In re Oetiker* because the Office failed to present a *prima facie* case of unpatentability. Nothing has been presented which differs or rebuts Petitioner's Declarants, who did fully address all matters criticized by the Office regarding operability. No reason exists to doubt the objective truth of the statements relied on, and therefore no basis exists for a rejection under either section 112, ¶1 for operability [*Environtech Corp. v. Al George, Inc.*, 730 F.2d 753, 762, 221 USPQ 473, 480 (Fed. Cir. 1984)]. Instead, the Office's unsubstantiated claim of lack of operability is solely based upon other peoples' work. As such there has been no compliance with the preexisting standards for review for patentability with respect to resolving operability by the Office.

V

1. The decision rejects the reasoning of *In re Prater* [415 F.2d 1393, 162 USPQ 541 (CCPA 1969)] because pending claims must be given the broadest reasonable interpretation "to thereby interpret limitations explicitly recited in the claim" consistent with the specification (\*\*\*)-9). The Office

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(\*\*\*)-9) As the *Amicus Curiae* Brief of Thomas Valone (Integrity Research Institute, Washington, DC; former Patent Examiner) has stated, "13. Regarding the rejection under 35 USC 112 second paragraph, the App. Bd. also apparently erred when they sustained it to both claim 32 and claim 42. Upon reviewing the disclosure of the case (Serial No. 07/371,937) and the Appeal Brief (11/28/92, p. 26), it is clear that the rejection only was applied for lack of antecedent basis of "said material" in claim 42. The use of "said material" in claim 32 has sufficient antecedent basis in the preamble of claim 32. Therefore, the rejection under 35 USC 112 second paragraph does not and should not apply to claim 32 at all.

has been inaccurate and instead of addressing the invention as it was actually taught in the original specification and claims, the Office has solely relied upon reference to art cut of a cloth other than the original specifications and Claims 25-48. This is not proper because the invention (structure, operation and composition) is defined by the Claim 25 and the original specification. The vibrator of '937 and the two-step method of '970 must be the focus of the operability requirement. As *Amicus Curiae* Valone (former Patent Examiner) has stated,

"Reading a claim in light of the specification, to thereby interpret limitations explicitly recited in the claim, is a quite different thing from 'reading the limitations of the specification into a claim,' to thereby narrow the scope of the claim by implicitly adding disclosed limitations which have no express basis in the claim"- *In re Prater*."

2. The decision rejects the reasoning of *In re Ziegler* [992 F.2d 1197, 1200, 26 USPQ2d 1600, 1603 (Fed. Cir. 1993)] because the notion that the written description fails to illuminate a credible operability can only be made, by not reading on the claims of this patent regarding a two-stage method. However, it is below the standards of review to solely use cloth cut of other art because the invention (structure, operation and composition) is defined by the claims and the original specification. This leading away from the actual original specification and claims by the Office, and fabrication of "*excess heat*" in '937, herald bias by the Office rather than proper application of the standards of review.

3. The decision rejects the reasoning of *Newman v. Quigg* because the Office derides the present invention with reference to cold fusion but, in fact, Claim 25 is a method for a two-stage method involving loading of hydrogen into a specialized metal electrode and has nothing to do with perpetual motion. Such (well-known) "boilerplate" attack by the Office on the words "*cold fusion*" is well-known [confer Bass, Rotegard, and Mallove Declarations, and the Valone, Fox, and Mallove *Amicus Curiae* Briefs]. As the *Amicus Curiae* Brief of Eugene F. Mallove, Sc.D (Editor, New Energy Research Laboratory, NH) has stated,

"6. The most notable characteristic of the attack against the Swartz patent application at hand is its stale fixation with misrepresented events of 1989, its citation of erroneous reports, and its continued argument from supposed authority, rather than from evolved science and meticulous experiment."

VI

1. The decision is inconsistent with Office rule MPEP 2107.01 because the previous rejection of claims 25-32, 35, 41-43, and 46 pursuant to 35U.S.C.102, and claims 25-48 pursuant to 35U.S.C.103 could not have been made and sustained through a final rejection had the invention truly been inoperative and lacking utility. No prior patented art can be found for something that clearly does not operate and has no utility, and the fact that claim 25 was found by the examiner to be anticipated by Rabinowitz shows that the Petitioner's invention must have made at least one credible assertion of specific utility to satisfy 35U.S.C.101 and 35U.S.C.112.

2. The decision is inconsistent with MPEP 2111.02 because any question of operability regarding claims 25, 27 and 46 can logically only refer to the preamble "In a process for producing a nuclear fusion product from an isotopic fuel using a material," which does not carry patentable weight in this claim. The preamble of claim 25 recites the purpose of the process. The body of the claim does not refer back to the preamble but deals with diffusion flux, and most importantly the process steps are able to stand alone. Therefore, claims 25, 27 and 46 can be asserted to have justifiable operability.

3. The decision is inconsistent with MPEP §1211 because the decision also ignores, and therefore rejects without explanation, the reasoning of the Board's judges Ordering the Office to remedy the failure of the Office to substantively respond to the Declarations which give conclusive effect regarding operability. The Board had the authority to do so pursuant MPEP §1211. The Office has not responded with specificity and substance as the Board ordered. It is egregious that the Remand Orders from the Board remain substantively ignored despite remand Orders requiring a reply to the Declarations which prove operability.

## VII

In '970, the decision rejects the reasoning of *In re Wands* [858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed.Cir.1988), citing with approval *Ex parte Forman*, 230 USPQ 546, 547 (Bd. Pat. App. & Int. 1986); also *In re Vaeck*] because Petitioner has fully complied with the operability requirement of 35 U.S.C. §112, ¶1. Petitioner's original specification and Claims 25-48 [A193] taught the subject matter defined by each of the rejected claims, set forth the best mode contemplated with an adequately written description of how to operate the invention, so that an artisan or those skilled-in-the-art, could practice it without undue experimentation, and distinctly pointed out and claimed the subject matter which constitutes the invention. These teachings were precise, clear, and unambiguous to a person skilled in the art, and adequately presented so that an artisan could practice it without undue experimentation [cf. Declarations A18, A44, A49, A62, A66, A72, A74, A77, A85, and *Amicus Curiae* Briefs]. Petitioner has far exceeded all requirements.

## VIII

What is in dispute is whether the Petitioner's original specification and claims shall be accurately and precisely addressed pursuant to the standards of review for patentability, or if the Office can reject the reasoning of other Courts, its own rules, and said standards of review. Petitioner's original specification '970 and Claim 25 demonstrate enablement (a question of law, *In re Fouché* [439 F.2d 1237, 1243, 169 USPQ 429, 434, (CCPA 1971)]) about a two-stage method involving loading of deuterium into a specialized metal electrode, because it is understood to one skilled-in-the-art [*Genentech Inc. v. Nova NordiskA/S*]. The Office ignores the invention and the submitted material Declarations by those skilled-in-the-art, and solely responds to art cut of cloth made of other than the present invention. The Office has not cited any authority by which it can arbitrarily and capriciously apply non-uniform standards of review.

Petitioner has been willing to reveal to the public the substance of his discovery and "the best mode . . . of carrying out his invention," 35 U.S.C. 112, and should be

granted "the right to exclude others from making, using, or selling the invention throughout the United States," for a period of 17 years. 35 U.S.C. 154. In return, the federal patent system is supposed to encourage the creation and disclosure of new, useful, and non-obvious advances in technology and design in return for the exclusive right to practice the invention for a period of years [United States v. Dubilier Condenser Corp., 289 U.S. 178, 186 -187 (1933)].

Petitioner submits that if the Office must rely upon reference to art cut of a cloth other than this specification and claims, then their position must indeed be rather weak and dictate allowance of the present invention. In accordance with the foregoing arguments, Petitioner's original specification and claims has complied and conformed with the requirements of sections 112 of the Patent Act, and reversal of the final rejection of claims 25-48 is respectfully requested, as required by the statute (35 USC 112).

**5. Whether the Office complied with the standards of review regarding utility under 35 U.S.C. §101.**

**I**

Petitioner submits that the Office has made improper and reversible rejections under 35 U.S.C. §101 for purported lack of utility by systematically ignoring Declarations, submitted by Petitioner, obtained from those skilled-in-the-art, and as a result, the Office has not followed the standards of review for patentability with respect to resolving utility [a matter of fact] and the decisions are inconsistent with other Court decisions. Title 35 U.S.C. 101 provides for the issuance of a patent to a person who "invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." [450 U.S. 175, 182]

The Declarants and witnesses state that the inventions have considerable utility heralding conformity with the requirements of §101. As *Amicus Curiae* Fox has stated,

" .. the subject invention by Dr. Mitchell Swartz has considerable utility, not only for specific type of



uses cited by Dr. Swartz, but also for a broader range of applications in both electrochemical operations and in experiments involving the handling of electrodes in some gaseous environments. The ability to determine the "loading" into an electrode by the means described by Dr. Mitchell Swartz is non-obvious, important, and useful."

35 U.S.C. 101 provides for the issuance of patents to "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof . . . .". '937 has obvious utility to measure loading of metal and '970 has great utility as a two-stage method to control loading, as confirmed by the unrebutted Declarations [and *Amicus Curiae* Briefs].

## II

The decisions reject the reasoning of *In re Irons* [52 CCPA 938, 340 F.2d 974, 144 USPQ 351 (1965) and *Ex parte Gray* [10 USPQ2d 1922, 1928 (Bd. Pat. App. & Inter. 1989)] because there was evidence of utility, beyond the detailed specifications and claims, in the form of expert testimony from the unrebutted Declarants (A18, A44, A49, A62, A66, A72, A74, A77, A85), *Amicus Curiae* [Drs. Chubb, Mallove, Fox, Bass, Swartz and Mr. Straus, Rotegard, and Valone], and others [A10-A21; A4-A36; A90-A116; also A75, A78-A80; confirmed by exhibits from the US Navy, US national laboratories, NASA, CEREM, SRI, and EPRI] which corroborate utility. These witnesses who support the Petitioner include two of the Office's own witnesses, Drs. Rehn (United States Navy) and Dr. Will, who contradict the Office's biased notion.

**"Perhaps the clearest scientific fact, at this time, is the hardest for physicists to accept: nuclear reactions apparently do occur in deuterium-loaded Pd, Ti, and probably in other solids."**

[Rehn, V., Ahmad, I., Sci. Info. Bull., Off. US Naval Research Asian Office, NAVSO P-3580, 18, 1/'93]

## III

The decisions reject the reasoning of *In re Brana* [51 F.3d 1560, 1566, 34 USPQ2d 1436, 1441 (Fed. Cir. 1995)] because

the Office provided not one iota of evidence from anyone else skilled in the art to rebut any one of Petitioner's Declarants with specificity and substance. Instead, the submitted Declarations [and four *Amicus Curiae* Briefs] are ignored. No reason exists to doubt the objective truth of the statements relied on for utility, and therefore no basis exists for a rejection under either section 101 for utility [*Environtech Corp. v. Al George, Inc.*, 730 F.2d 753, 762, 221 USPQ 473, 480 (Fed. Cir. 1984)].

IV

The decisions reject the reasoning of *Standard Oil Co. (Indiana) v. Montedison* [S.P.A., 664 F.2d 356, 375, 212 USPQ 327, 344 (3rd Cir. 1981), *cert. denied*, 456 U.S. 915, 102 S.Ct. 1769, 72 L.Ed.2d 174 (1982)], *E.I. du Pont de Nemours & Co. v. Berkley & Co.* [620 F.2d 1247, 1258 n.10, 1260 n.17, 205 USPQ 1, 8n10, 10n.17 (8th Cir. 1980)], *Krantz and Croix v. Olin* [148 USPQ 659, 661-62 (CCPA 1966)] and *Raytheon Company v. Roper Corporation* [U.S.C.A., Federal Circuit, 1983, 724 F.2d 951, 220 USPQ 592] because the present claimed invention meets at least one stated objective, and therefore utility under §101 is clearly shown.

V

1. The decisions are inconsistent with, and conflict with several of the Office's own rules. Attention is directed to the fact that these decisions are inconsistent with MPEP 2107.01 because the previous rejections pursuant to 35 U.S.C. 102 of claims 25-32, 35, 41-43, and 46 over Rabinowitz in '970 and claims 32 and 35-41 over Johnson in '937 could not have been made and sustained through a final rejection had either of the inventions truly been inoperative and lacking utility.

As *Amicus Curiae* Valone has stated,

"4. .... it is well-known to those skilled in patent examining that no prior patented art can be found for something that clearly does not operate and has no utility. Specifically, the fact that claim 32 was found by the examiner to be anticipated by Johnson (Appeal Brief 07/371,937 - 11/28/92, p. 26) shows that the appellant's invention must have made at least one credible assertion of specific utility to satisfy 35 U.S.C. 101 and 35 U.S.C. 112 (MPEP 2107.01)."

2. No prior patented art can be found for something that clearly does not operate and has no utility. The fact that claim 25 was found by the examiner to be anticipated by Rabinowitz shows that the Petitioner's inventions must have each made at least one credible assertion of specific utility to satisfy 35 U.S.C.101.

As *Amicus Curiae* Valone (former Patent Examiner) has stated, "6. Regarding the actual rejections under 35 U.S.C. 101 and 35 U.S.C. 112, first paragraph, and the App. Bd. Decision (p. 12), it is valuable to note that "where an applicant has set forth a specific utility, courts have been reluctant to uphold a rejection under 35 U.S.C. 101 solely on the basis that the applicant's opinion as to the nature of the specific utility was inaccurate" (MPEP 2107 I.) and "practical considerations require the Office to rely on the inventor's understanding of his or her invention in determining whether and in what regard an invention is believed to be 'useful'" (MPEP 2107 I.). In both instances, the App. Bd. has apparently disregarded the specific utility and the inventor's understanding of his invention."

"7. The Board of Appeals further performs a logical non sequitor when it starts the discussion of the rejections under 35 U.S.C. 101 and 35 U.S.C. 112, first paragraph with the word "incredible" on the first page (App. Bd. p. 12) of a fourteen-page discourse on utility. Rather it is specifically noted that "Office personnel should be careful not to label certain types of inventions as 'incredible' or 'speculative' as such labels do not provide the correct focus for the evaluation of an assertion of utility. 'Incredible utility' is a conclusion, not a starting point for analysis under 35 U.S.C. 101 (MPEP 2107.01, I.B) (emphasis in the original text)."

"11. By a process of elimination, the question of utility (App. Bd. p. 12-26) regarding claim 32 can logically only refer to the preamble "In a process...is electrochemically loaded," which however, does not carry patentable weight in this claim. To emphasize this fact more clearly, note:

(1) the preamble of claim 32 recites the purpose of the process,

(2) the body of the claim does not refer back to the preamble,

(3) the process steps are able to stand alone (MPEP 2111.02).

Therefore, claim 32 can be asserted to have justifiable utility when the preamble is put in proper perspective."

## **6. Whether the Office has violated the United States Constitution.**

### **I**

1. The Office has rejected the controlling authority of Art. I, §8, cl. 8 which provides that "Congress shall have Power (t)o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries". (\*\*-10) Art. I, §8, cl. 8 empowers Congress in this matter.

2. Congress has mandated progress.

"The patent laws (reflect) this Nation's deep-seated .... need to encourage progress."

[Diamond v. Chakrabarty, 447 U.S. 303 (1980), 447 U.S. 303, No. 79-136, quoting Deepsouth Packing Co. v. Laitram Corp., 406 U.S. 518, 530 -531 (1972); Graham v. John Deere Co., 383 U.S. 1, 7 -10 (1966).]

3. Congress has mandated encouragement of science, and the Office's actions are inconsistent with the Patent Act of 1793, authored by Thomas Jefferson, which defined statutory subject matter as "any new and useful art, machine, manufacture, or composition of matter" Act of Feb. 21, 1793, 1, 1 Stat. 319, and with the Act which

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\*\*\*-10 "The patent laws promote this progress by offering inventors exclusive rights for a limited period as an incentive for their inventiveness and research efforts. Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 480-481 (1974); Universal Oil Co. v. Globe Co., 322 U.S. 471, 484 (1944). The authority of Congress is exercised in the hope that "[t]he productive effort thereby fostered will have a positive effect on society through the introduction of new products and processes of manufacture into the economy, and the emanations by way of increased employment and better lives for our citizens." Kewanee, supra, at 480." [Diamond v. Chakrabarty, 447 U.S. 303 (1980) 447 U.S. 303 No. 79-136]

embodied Jefferson's philosophy that "ingenuity should receive a liberal encouragement." [447 U.S. 303, 309].

4. Congress has mandated subject matter to be broad, and therefore the Office's actions are inconsistent with the 1952 Act requiring statutory subject matter to "include anything under the sun that is made by man." S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952). [Diamond v. Chakrabarty, 447 U.S. 303 (1980), 447 U.S. 303, No. 79-136].

5. Congress has stated that the Office shall respect Art. I, §8, cl. 8 [Patent Act of 1952, 35 U.S.C. 103]:

"Patentability shall not be negated by the manner in which the invention was made."

6. As a result, the Office has rejected the controlling authority of Art. VI which prohibits actions that interfere with the Constitution or laws passed by Congress including those arising from Art. I, §8, cl. 8, and leading to the creation, function, funding, operation, and aegis of the Office.

## II

The Office has acted improperly exceeding even the bounds provided for Congress. This Court has previously noted that even Congress may not

"authorize the issuance of patents whose effects are to remove existent knowledge from the public domain, or to restrict free access to materials already available."

[Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141 (1989), 489 U.S. 141, No. 87-1346, quoting Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 6 (1966)]

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\*\*\*-11 As discussed by the Petitioner, as shown by the claims themselves, as corroborated by the Declarants and *Amicus Curiae*, fusion and cold fusion are merely two environments where the inventions have great utility. Others environments include fuel cell technology, hydrogen storage, catalysis, energy storage and energy monitoring. In retrospect, this non-compliance by the PTO could have been avoided if the PTO recognized the controlling authority of Art. I, §8, cl. 8, and if the PTO's actions were consistent with the American Bar Association's most recent comments on new description guidelines of the PTO [http://www.uspto.gov/web/offices/com/sol/comments/utilitywd/aba.pdf] which says that the PTO should be "technologically neutral."

and therefore the Office should not be able to remove knowledge of this field from the public domain or thereof restrict access.

The Office has taken the unauthorized and incorrect position that if any technology has a relation to cold fusion then it is *per se* unimportant and that its inventor will be denied Constitution protections afforded to other citizens (\*\*\*-11). But this has been wrong, and a violation of Art. I, §8, cl. 8.

As the *Amicus Curiae* Fox has stated,

"12. ... although an estimated 300 patent applications have been sent to the U.S. Office of Patents and Trademarks by inventors of new cold fusion devices and systems, no patents have issued citing the prior art. ..."

"13. Inventors in other countries have been successful in obtaining patent protection by the governments. Over 100 low-energy nuclear reactions patents have issued in Japan and many more in various European countries ..."

To allow this usurpation of Art. I, §8, cl. 8 to stand will exalt temporary politically-correct (and scientifically-wrong) form over substance.

### III

The Office's reliance upon art other than the actual original specifications and claims, *supra*, its presumably "tongue-in-cheek" abrication of "excess heat" in '937, *supra*, and its systematic failure to answer any of the Declarations, is behavior heralds bias rather than the proper application of the standards of review for patentability under Art. I, §8, cl. 8.

By its systematic failure to use a uniform standard of review for patentability, by its ignoring Petitioner's Declarants, and by its ignoring its own rules for patentability, the Office has denied due process and thereby Equal protection under the law [*United States v. Nixon* (1974)].

"Today's patent statute is remarkably similar to the law as known to Jefferson in 1793. Protection is offered to "[w]hoever invents or discovers any new

and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." 35 U.S.C. 101

[*Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141 (1989), 489 U.S. 141, No. 87-1346]

This protection has been denied to Petitioner. As with the Office's denial of entry of Amendments (A187) with minor changes to overcome possible indefiniteness suggested by the Examiner in writing and in conversations, when they added neither new matter nor issues, is more than a violation of MPEP 707.07(j) and MPEP 706.03(d), but behavior which does not comport with any notion of fair play or justice. Discrimination has previously been important to the Court (\*\*-12).

By ignoring standards of patentability, the decisions are arbitrary, selective, and capricious and encourage discrimination and civil rights violations under color of law [*U. S. v. Price*, 86 S. Ct. 1152, 1157] including due process and Equal protection under the law [5th Amendment and 14th Amendment] and other "equal protection" clauses [*Frontiero v. Richardson*, 93 S.Ct. 1736, 411 U.S. 677; *Weiss v. Weiss*, 436 N.Y.S. 2d. 862, 52 N.Y. 2d. 170 (1981)], with serious possible implications [*Gass v. Lopez*, 95 S. Ct 729; *Wood v. Strickland*, 95 S Ct 952; *U.S. v. Price*, 86 S Ct 1152, 1157, Footnote 7; *Griffin v. Breckenridge*, 91 S Ct 179D; *Gamez v. Toledo*, 42 U.S.C. §1983, and *Bivens v. Six Unknown Named Agents of Fed. Bureau of Narcotics*].

### CONCLUSION

In '937 and '970, the putative "lack of operability" under 35 U.S.C. §112, ¶1 and "lack of utility" under 35 U.S.C. §101 has only been made by ignoring the original

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(\*\*-12) Civil Rights Acts of 1964 and 1991, the Americans with Disabilities Act of 1990, the Voting Rights Act of 1965, the Equal Credit Opportunity Act, the Equal Educational Opportunities Act of 1974, the Individuals With Disabilities Act, the Equal Pay Act of 1963, the Age Discrimination in Employment Act of 1967, the Age Discrimination Act of 1975, the Rehabilitation Act of 1973, Title IX of the Education Amendments of 1972, the Community Reinvestment Act of 1977, the Immigration Reform and Control Act of 1986, the Fair Housing Act of 1968, the Family and Medical Leave Act of 1993, and Executive Order 11246 (1965) as amended by Executive Order 11375 (1967).

specification and claims, by ignoring the timely-submitted un rebutted Declarations, by ignoring scores of Exhibits and references, and by ignoring the Office's own rules, thus creating an arbitrary standard of review for patentability.

In '937, the putative "indefiniteness" under 35 U.S.C. §112, ¶2 has only been made by ignoring the reasoning of several decisions, the Office's own rules, and what those who were skilled-in-the-art at the time the original specification and claims were filed have stated [*In re Morris*] in un rebutted Declarations [*In re Marzocchi*] produced as required [*In re Oetiker*] which fully addressed all matters criticized by the Office regarding matters of fact. The Office has not provided any reason to doubt the objective truth of any of the Declarants' statements relied on for enabling support. No basis exists for a rejection under either section 112, ¶1 for operability lack of enablement or section 101 for lack of utility [*Environtech Corp. v. Al George, Inc.*, 730 F.2d 753, 762, 221 USPQ 473, 480 (Fed. Cir. 1984)].

The Office failed its Obligation to submitted un rebutted Declarations on fact issues.

The Office has not properly followed its own standards of review regarding patentability or its own Rules, and has shown abuse of discretion and has failed to comply with previous Orders by the Board for a response to said Declarants regarding material matters of fact (operability and utility).

The Office's unfounded attack on "excess energy" which was not even mentioned in the '937 original specification and claims, and the Office's continual reliance upon reference to art cut of a cloth not even made from the original specifications and claims, in the light of the ignored un rebutted duly-submitted Declarations, herald that the Office's position must indeed be rather weak -- which dictates allowance of the present inventions.

This case may initially appear to be *de minimis* because it involves atoms of hydrogen loaded into minute vibrating materials, but is of great and compelling importance when measured by either the particular constitutional mandate of Art. I, §8, cl. 8 or the number of people dependent upon



energy monitoring, efficiency and utilization. Congress has spoken to "encourage progress" [*Diamond v. Chakrabarty*] and to encourage ingenuity [447 U.S. 303, 309] and has performed its constitutional role in defining patentable statutory subject matter to include "anything under the sun that is made by man." [S. Rep. No. 1979, 82d Cong., 2d Sess., 5 (1952); H. R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)]. There is no doubt that would include inventions involving energy efficiency and material monitoring within the meaning of the statute. Therefore, the Office has not acted following Congress lead as authorized by Art. I, §8, cl. 8.

Given that Congress has spoken it is "the province and duty of the judicial department to say what the law is." [*Marbury v. Madison*, 1 Cranch 137, 177 (1803)]. This Court has final supervisory jurisdiction over the subject matter and should correct this situation by directing the Respondants to abide by their own Rules and standards of review.

Petitioner respectfully requests that this Petition for Writ of Certiorari be granted.

Respectfully submitted,

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Mitchell Swartz, *pro se*, Petitioner  
P.O. Box 81135  
Wellesley Hills, MA 02481-0001  
(781) 237-3625

#### Certificate Of Service

I certify that three copies of the above Petition have been mailed first class prepaid to the Respondent's attorney of record, Attorney Mark Nagumo, Associate Solicitor, 2121 Crystal Drive, P.O. Box 15667, Arlington, Virginia, 22215, this January 8, 2001.

**APPENDIX A - DECISION 00-1107 (Serial No.  
07/371,937)**

Issuing Court: US Court of Appeals for the Federal Circuit  
Number of Case: 00-1107 (Serial No. 07/371,937)  
Date of Denial: 11/08/00

**IN RE MITCHELL R. SWARTZ**

DECIDED: November 8, 2000

Before PLAGER, Circuit Judge, ARCHER, Senior Circuit  
Judge, and DYK, Circuit Judge. PER CURIAM.

Mitchell R. Swartz appeals from the decision of the Board of Patent Appeals and Interferences (Board), Appeal No. 94-2921, affirming the examiner's final rejection of claims 32-43 of application Serial No. 07/371,937 for lack of operability or utility under 35 U.S.C. § 101, lack of enablement under 35 U.S.C. § 112, ¶ 1, and indefiniteness under 35 U.S.C. § 112, ¶ 2. We affirm the Board's decision. The Board summarily affirmed the examiner's rejection of claims 32-43 under § 112, ¶ 2, because Mr. Swartz made no substantive arguments addressing the examiner's rejection. In the numerous briefs he filed with the Board, Mr. Swartz argued only that, after the final office action rejecting all pending claims, he had filed two amendments that addressed the indefiniteness rejection. The examiner had refused to enter the amendments because they would raise the issue of new matter, and the Commissioner had denied Mr. Swartz's petition under 37 C.F.R. § 1.181 requesting review of the examiner's decision. Although Mr. Swartz received notice that the brief he filed with the Board did not comply with the requirements of 37 C.F.R. § 1.192(c) because it did not address the indefiniteness rejection, he continued to argue only that his proposed amendments properly addressed the rejection under § 112, ¶ 2. Mr. Swartz reiterates that argument on appeal to this court.

We agree with the Board that Mr. Swartz did not present any substantive arguments addressing the rejection under § 112, ¶ 2. Mr. Swartz argued that the proposed amendments would overcome the rejection, but the amended claims were not before the Board. The Board could consider only the rejection of the non-amended claims, and Mr. Swartz presented no reasons why the Board should sustain the

examiner's indefiniteness rejection of those claims. Mr. Swartz contends that the Board should have addressed the examiner's refusal to enter his proposed amendments after the final rejection. That decision, however, was not before the Board. Nor is that decision before this court. Nevertheless, we observe that Mr. Swartz's proposed amendments were not merely amendments suggested by the examiner to address the indefiniteness problem. While the examiner made some suggestions, he made no representation that those suggestions would overcome the indefiniteness rejection. More importantly, Mr. Swartz proposed an additional claim limitation not suggested by the examiner, and it was that limitation that the examiner determined would raise the issue of new matter.

We conclude that the Board properly affirmed the examiner's rejection under § 112, ¶ 2 because Mr. Swartz presented no substantive arguments. We also conclude that the Board did not err in failing to review the examiner's refusal to enter amendments after final rejection. Because we affirm the Board's decision sustaining the rejection under § 112, ¶ 2, we need not address the Board's decision sustaining the rejections under § 101 and § 112, ¶ 1.

**APPENDIX B - DECISION 00-1108 (Serial No.07/760,970)**

Issuing Court: US Court of Appeals for the Federal Circuit  
Number of Case: 00-1108 (Serial No.07/760,970)  
Date of Denial: 11/08/00

**IN RE MITCHELL R. SWARTZ**

DECIDED: November 8, 2000  
Before PLAGER, Circuit Judge, ARCHER, Senior Circuit Judge, and DYK, Circuit Judge.  
PER CURIAM.

Mitchell R. Swartz appeals from the decision of the United States Patent and Trademark Office (PTO) Board of Patent Appeals and Interferences (Board), Appeal No. 94-2920, affirming the examiner's final rejection of claims 25-48 of application Serial No. 07/760,970 for lack of operability or utility under 35 U.S.C. § 101 and lack of enablement under 35 U.S.C. § 112, ¶ 1. We affirm the Board's decision.

The questions of whether a specification provides an enabling disclosure under § 112, ¶ 1, and whether an application satisfies the utility requirement of § 101 are closely related. Process Control Corp. v. HydReclaim Corp., 190 F.3d 1350, 1358, 52 USPQ2d 1029, 1034 (Fed. Cir. 1999). To satisfy the enablement requirement of § 112, ¶ 1, a patent application must adequately disclose the claimed invention so as to enable a person skilled in the art to practice the invention at the time the application was filed without undue experimentation. Enzo Biochem, Inc. v. Calgene, Inc., 188 F.3d 1362, 1371-72, 52 USPQ2d 1129, 1136 (Fed. Cir. 1999). The utility requirement of § 101 mandates that the invention be operable to achieve useful results. See Brooktree Corp. v. Advanced Micro Devices, Inc., 977 F.2d 1555, 1571, 24 USPQ2d 1401, 1412 (Fed. Cir. 1992). Thus, if the claims in an application fail to meet the utility requirement because the invention is inoperative, they also fail to meet the enablement requirement because a person skilled in the art cannot practice the invention. See Process Control, 190 F.3d at 1358, 52 USPQ2d at 1034; see also In re Ziegler, 992 F.2d 1197, 1200, 26 USPQ2d 1600, 1603 (Fed. Cir. 1993) ("The how to use prong of section 112

incorporates as a matter of law the requirement of 35 U.S.C. § 101 that the specification disclose as a matter of fact a practical utility for the invention.”). Lack of utility is a question of fact, In re Cortright, 165 F.3d 1353, 1356, 49 USPQ2d 1464, 1465 (Fed. Cir. 1999), and the absence of enablement is a legal conclusion based on underlying factual inquiries, Enzo, 188 F.3d at 1369, 52 USPQ2d at 1134. In appeals from the Board, we review questions of fact for substantial evidence. In re Gartside, 203 F.3d 1305, 1315, 53 USPQ2d 1769, 1775 (Fed. Cir. 2000). We exercise independent review over the conclusion of whether a disclosure is enabling. Enzo, 188 F.3d at 1369, 52 USPQ2d at 1134. The PTO has the initial burden of challenging a patent applicant’s presumptively correct assertion of utility. In re Brana, 51 F.3d 1560, 1566, 34 USPQ2d 1436, 1441 (Fed. Cir. 1995). If the PTO provides evidence showing that one of ordinary skill in the art would reasonably doubt the asserted utility, however, the burden shifts to the applicant to submit evidence sufficient to convince such a person of the invention’s asserted utility. Id. Here the PTO provided several references showing that results in the area of cold fusion were irreproducible. Thus the PTO provided substantial evidence that those skilled in the art would “reasonably doubt” the asserted utility and operability of cold fusion. The examiner found that Mr. Swartz had not submitted evidence of operability that would be sufficient to overcome reasonable doubt. After its review of the evidence, the Board found that Mr. Swartz had “produced no persuasive objective evidence, in our view, that overcomes the examiner’s position.” Regarding the enablement requirement, the PTO found that the written description in Mr. Swartz’s application contains no disclosure of any operative embodiment. Thus, in order to practice the claimed invention, a person of ordinary skill in the art would have had to rely on the art known at the filing date, September 19, 1991. For reasons similar to those forming the basis for his finding that Mr. Swartz had not submitted evidence of operability, the examiner found that Mr. Swartz had not submitted evidence that the concept of the invention could have been practiced by a person skilled in the art at the time of the invention without undue experimentation. The Board found that Mr. Swartz’s arguments did not overcome the examiner’s position, and

accordingly sustained the examiner's enablement rejection. On this appeal, Mr. Swartz complains that the Board "ignored" evidence that he submitted and disregarded his arguments, and he invites this Court to examine voluminous record material that he urges supports his position on the issue of utility. Such conclusory allegations in an appeal brief are quite insufficient to establish that the Board's decision on the issue of utility is not supported by substantial evidence or to establish that the Board's ultimate conclusion of a lack of enablement is incorrect as a matter of law. Finally, Mr. Swartz's attempt to show that his claims are directed to a process other than cold fusion must fail. In his written description and throughout prosecution of his application, Mr. Swartz continually represented his invention as relating to cold fusion. For the reasons discussed above, the Board did not err in concluding that the utility of Mr. Swartz's claimed process had not been established and that his application did not satisfy the enablement requirement.

Accordingly, the judgment of the Board is

AFFIRMED.

**APPENDIX C - ORDER DENYING REHEARING  
DECISION 00-1107 (Serial No 07/371,937)**

Issuing Court: US Court of Appeals for the Federal Circuit  
Number of Case: 00-1108 (Serial No.07/760,970)  
Date of Denial: 12/06/00

**ORDER**

Before DYK, Circuit Judge, ARCHER, Senior Circuit Judge, and PLAGER, Senior Circuit Judge\*.

A petition for rehearing having been filed by the APPELLANT, UPON CONSIDERATION THEREOF, it is ORDERED that the petition for rehearing be, and the same hereby is, DENIED.

The mandate of the court will issue on January 2, 2001, unless another time becomes appropriate under Rule 41.

FOR THE COURT,  
Jan Horbaly  
Clerk

Dated: December 6, 2000

U.S. COURT OF APPEALS FOR THE FEDERAL  
CIRCUIT

DEC 6, 2001

CC: Mitchell R. Swartz

Albin F. Drost

Thomas Valone, Hal Fox

IN RE SWARTZ, 00-1107

(PTO - 07/371,937)

\* Circuit Judge Plager assumed senior status on November 30, 2000.

Note: Pursuant to Fed. Cir. R. 47.6, this order is not citable as precedent. It is a public record.

**APPENDIX D - ORDER DENYING REHEARING  
DECISION 00-1108 (Serial No.07/760,970)**

Issuing Court: US Court of Appeals for the Federal Circuit  
Number of Case: 00-1108 (Serial No.07/760,970)  
Date of Denial: 12/06/00

**ORDER**

Before DYK, Circuit Judge, ARCHER, Senior Circuit Judge, and PLAGER, Senior Circuit Judge\*.

A petition for rehearing having been filed by the APPELLANT, UPON CONSIDERATION THEREOF, it is ORDERED that the petition for rehearing be, and the same hereby is, DENIED.

The mandate of the court will issue on January 2, 2001, unless another time becomes appropriate under Rule 41.

FOR THE COURT,  
Jan Horbaly  
Clerk

Dated: December 6, 2000

U.S. COURT OF APPEALS FOR THE FEDERAL  
CIRCUIT

DEC 6, 2001

CC: Mitchell R. Swartz

Albin F. Drost

Thomas Valone, Hal Fox

IN RE SWARTZ, 00-1108  
(PTO - 07/760,970)

\* Circuit Judge Plager assumed senior status on November 30, 2000.

Note: Pursuant to Fed. Cir. R. 47.6, this order is not citable as precedent. It is a public record.



**APPENDIX E - CLAIMS OF SUBJECT MATTER**

**Serial No. 07/371,937**

Claim 32. In a process for producing a product from an isotopic fuel using a material which is electrochemically loaded, a method for monitoring the isotopic fuel within said material that comprises:  
mechanically coupling said material to enable a mechanical vibration of said material,  
providing means for exciting said vibration,  
following the frequency of said vibrational state.

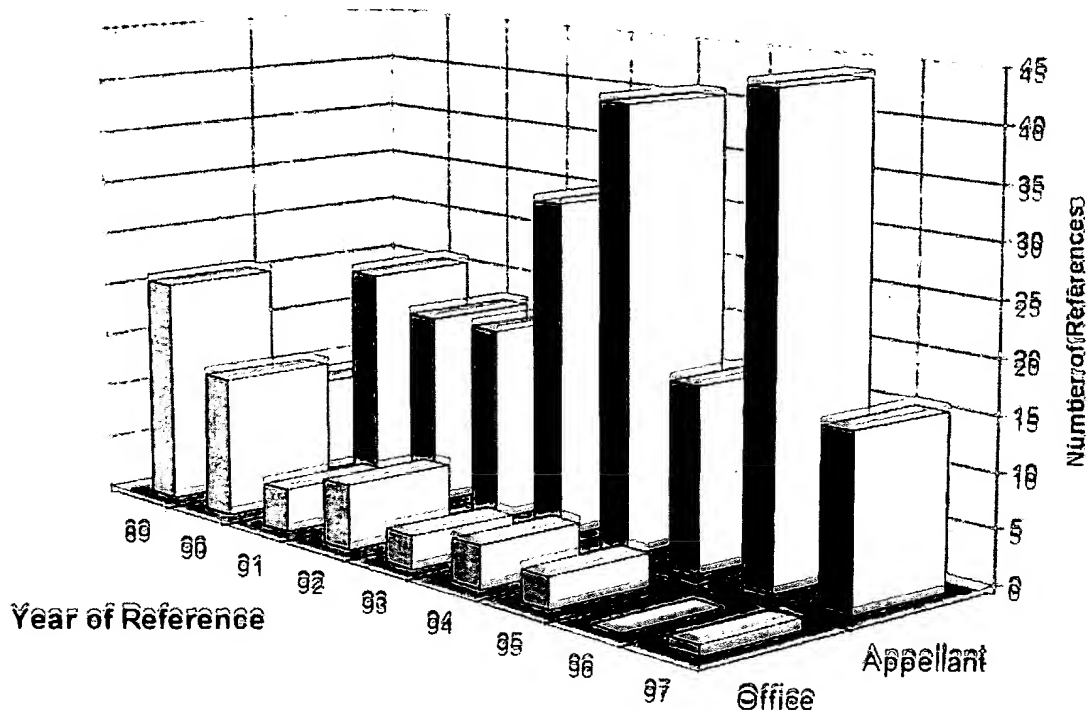
**Serial No. 07/760,970**

Claim 25. In a process for producing a nuclear fusion product from an isotopic fuel using a material, a two-stage method for controlling said reaction which includes in combination:  
supplying an isotopic fuel to said material,  
loading said isotopic fuel into said material to saturate said material,  
then creating a change in the active quantity of said fuel within said material by desaturation,  
creating thereby a catastrophic diffusion flux of said isotopic fuel within said material[s]."

### APPENDIX "F"

Several hundred submitted references from the Appellant date from 1989 to 2006. These publications are recent unlike the Office's 17 year old newspapers. Their histogram is shown. Not included are the Appellant's peer-reviewed publications which are even more relevant.

References by the Office and Appellant by Year since 1989



## APPENDIX "I"



UNITED STATES DEPARTMENT OF COMMERCE  
 PATENT AND TRADEMARK OFFICE  
 ASSISTANT SECRETARY AND COMMISSIONER  
 OF PATENTS AND TRADEMARKS  
 WASHINGTON, D.C. 20231

Memorandum

DATE June 5, 1989  
 TO All Group Directors  
 FROM Kenneth C. Cage, Director  
 Group 220  
 SUBJECT Cold Fusion Applications

RECEIVED  
 JUN-5 1989  
 10:00 AM  
 DIRECTOR'S OFFICE

Although the media attention relating to cold fusion has diminished, we are just now beginning to see a large number of applications relating to this subject. Although we are attempting to identify all of these applications in the pre-examination screening process, there is a possibility that a few applications may slip through without being identified. Please have your examiners be on the look out for any application that may relate to cold fusion. Some of the areas where a cold fusion application might be filed are:

Fuel Cells	class 429
Electrochemistry	class 204
Power plant	class 60
Radiant energy	class 250
Helium production	class 423

If one of your examiners should receive an application relating to cold fusion, he or she should check to make sure the words "COLD FUSION" are stamped on the file wrapper. If not, the application should be referred to Licensing and Review, EP4-10623 for marking. Also, any action on one of these applications should be routed through the Group 220 Director's Office and the Office of the Assistant Commissioner for Patents prior to mailing.

Thank you for your cooperation. Should have any questions, please contact me.

## APPENDIX F

<b>List Of Ignored Unrebutted Timely-Submitted Declarations</b> (As Exhibits in Each US Court of Appeals for the Federal Circuit Appendix 00-1107 and 00-1108, Prepared Pursuant to FRAP 30(a)(1)(B))	
IN RE SWARTZ, 00-1107 (07/371,937)	
- Declaration Supporting Appeal to Board	A18
Declaration of Straus	A44
Declaration of Swartz with 2nd Reply Brief	A49
Excerpts Second Reply Brief (1-4,14)	A57
Declaration of Bass	A62
Declaration of Mallove	A66
Declaration of Fox	A72
Declaration of Rotegard	A75
Declaration of Swartz with Reply Brief	A77
Letter Miles	A78
Letter Ahern	A79
Letter Kurzweil	A80
IN RE SWARTZ, 00-1108 (Serial No.07/760,970)	
Declaration of Straus	A10
Declaration of Swartz with Reply Brief	A13
Declaration of Bass	A22
Declaration of Mallove	A26
Declaration of Fox	A32
Declaration of Rotegard	A35
Letter Miles	A37
Letter Ahern	A38
Letter Kurzweil	A39

## APPENDIX G



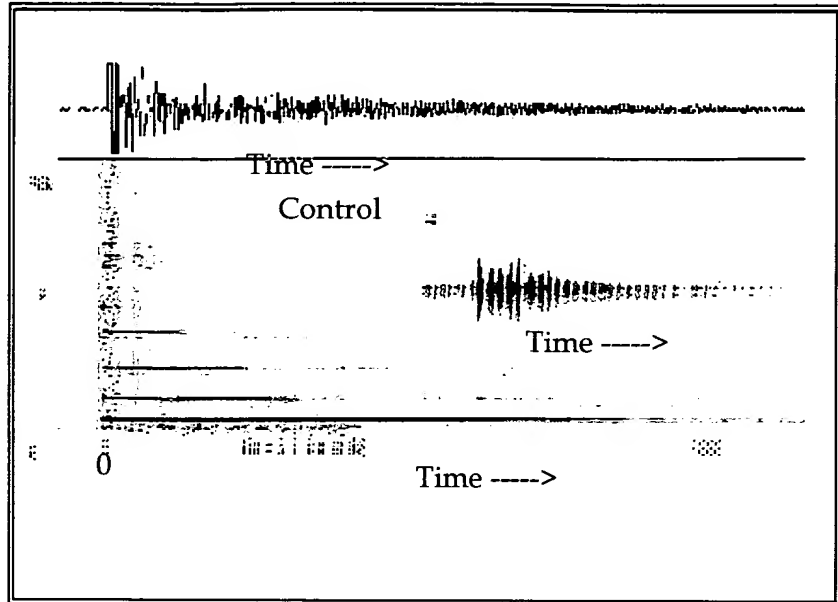
### Pleadings, Declarations, and Exhibits Submitted

The Declarations and submitted Exhibits exceed by any test the amount of evidence required for proof of utility. In this case (00-1107), the Documents and pleadings supplied are on the left. Those from case 00-1108 are on the right. The documents include more than three hundred references, more than thirty publications by the Applicant, Declarations and other exhibits, constituting considerable weight (more than 140 pounds for all of the patent applications). These Declarations and exhibits with crystal clarity disprove the Board's notions and are therefore sufficient [In re Gazave, 54 CCPA 1524, 379 F.2d 973, 154 USPQ 92 (1967); In re Chilowsky, 43 CCPA 775, 229 F.2d 457, 108 USPQ 321 (1956); In re Jolles, U.S.C.P.A., 1980, 628 F.2d 1322, 206 USPQ 885].

NOTA BENE: In '937, the Office's "docket" is inaccurate in several ways. Forty-three (43) pleadings, Declarations, and letters sent by the Appellant were not recorded, and Declarations have been incorrectly listed as "letters". It also ignores that six (6) pleadings of, or communications by, the Office were not sent to the Appellant. No explanation is given for the eighteen (18) Office's entries out-of-order temporally, indicating that the purported "Docket" was not made contemporaneously [Appendix A1-A7 (corrected A8-A11, proof A12-A17)] and in defiance of the Office's date stamps (A12) and in violation of 18 U.S.C. 2071. These events have prejudiced the Appellant.

In '970, the Office's "docket" is inaccurate in several ways. Thirty seven (37) of Appellant's pleadings and Declarations were not recorded. The Board has confirmed this in a remand (A82). As many as six (6) pleadings of, or communications by, the Office were not sent to the Appellant. The analysis reveals that, curiously, seven (7) of the Office's entries are out of order, indicating that the purported "Docket" was not made contemporaneously. These events have prejudiced the Petitioner.

## APPENDIX H



### FAST FOURIER TRANSFORM OF VIBRATING ELECTRODE

After beginning the vibration with a single pulse at  $t=0$ , and picking up the signal with two audio transducers (top and mid-right hand side), the short-lived vibrational modes of the electrode are dramatically revealed by computed processing using a fast fourier transform (FFT; bottom and lower left; the frequencies are vertical and time is horizontal). A calibration signal ("control") was inserted at  $17,390^{+/-53}$  Hz. (the blue horizontal line approximately half-way up the image. The sampling rate was ~100 kilohertz, and the cathode was #92-505b/Ni-B2 immersed in ordinary water using the teachings of the present original specification and claims.

**UNITED STATES PATENT AND TRADEMARK OFFICE**  
**Board of Patent Appeals and Interferences**  
Case

Inventor : Mitchell R. Swartz  
Serial no. 09/ 750,765

Filed: 12/28/00

For: **METHOD AND APPARATUS  
TO CONTROL ISOTOPIC FUEL  
LOADED WITHIN A MATERIAL**

This is a continuation of Serial no. 07/ 760,970

Filed: 09/17/1991

Group Art Unit: 3641  
Examiner: Palabrica, R.J.

July 25, 2012

**Board of Patent Appeals and Interferences**  
Box Appeal  
Alexandria, VA 22313-1450

***pro se* REPLY BRIEF**

Mitchell R. Swartz, ScD, MD, EE  
Appellant, *pro se*

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